1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1165 was composed of five water samples designated under SAF No. C01-008 with a Project Designation of: 100HR3 IAM (1 & 2) GW Monitoring, November 2000.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

The RPD between sample B10LD7 and its sample duplicate was 91%, greater than the 3σ limit of 57%. No other problems were encountered during the course of the analyses.

2.2 Tritium Analyses

No 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

1/23/01
Date

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EDMC

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

SAMPLE SUMMARY

SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1165

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10LC7	Hanford Site	WATER		R012027-03	C01-008	C01-008-44	12/04/00 12:57
B10LD7	Hanford Site	WATER		R012027-02	C01-008	C01-008-38	12/05/00 10:36
B10LJ5	Hanford Site	WATER		R012027-01	C01-008	C01-008-36	12/05/00 11:49
B10LV5	Hanford Site	WATER		R012027-04	C01-008	C01-008-50	12/04/00 09:55
B10LV7	Hanford Site	WATER		R012027-05	C01-008	C01-008-52	12/04/00 11:17
Method Blank		WATER		R012027-07	C01-008		
Lab Control Sample		WATER		R012027-06	C01-008		
Duplicate (R012027-02)	Hanford Site	WATER		R012027-08	C01-008		12/05/00 10:36
Spike (R012027-02)	Hanford Site	WATER		R012027-09	C01-008		12/05/00 10:36

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

QC SUMMARY

SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1165

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
7587	C01-008-36	B10LJ5	WATER				12/06/00	1	R012027-01	7587-001
	C01-008-38	B10LD7	WATER				12/06/00	1	R012027-02	7587-002
	C01-008-44	B10LC7	WATER				12/06/00	2	R012027-03	7587-003
	C01-008-50	B10LV5	WATER				12/06/00	2	R012027-04	7587-004
	C01-008-52	B10LV7	WATER				12/06/00	2	R012027-05	7587-005
		Method Blank	WATER						R012027-07	7587-007
		Lab Control Sample	WATER						R012027-06	7587-006
		Duplicate (R012027-02)	WATER				12/06/00	1	R012027-08	7587-008
		Spike (R012027-02)	WATER				12/06/00	1	R012027-09	7587-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

PREP BATCH SUMMARY

SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1165

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
82B	WATER	Gross Beta in Water	6962-186	15.0	5			1	1	1/1		
88A	WATER	Gross Alpha in Water	6962-186	20.0	5			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	6962-186	10.0	5			1	1	1/1	1/1	

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

WORK SUMMARY

SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1165

CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	LAB SAMPLE ID COLLECTED RECEIVED	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
B10LC7			R012027-03	7587-003	82B/82		01/16/01	01/20/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/04/00	7587-003	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
C01-008-44	C01-008		12/06/00	7587-003	H		01/02/01	01/20/01	MCM	Tritium in Water
B10LD7			R012027-02	7587-002	82B/82		01/18/01	01/20/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/05/00	7587-002	88A/88		01/15/01	01/20/01	MCM	Gross Alpha in Water
C01-008-38	C01-008		12/06/00	7587-002	H		01/02/01	01/20/01	MCM	Tritium in Water
B10LJ5			R012027-01	7587-001	82B/82		01/16/01	01/20/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/05/00	7587-001	88A/88		01/15/01	01/20/01	MCM	Gross Alpha in Water
C01-008-36	C01-008		12/06/00	7587-001	H		01/02/01	01/20/01	MCM	Tritium in Water
B10LV5			R012027-04	7587-004	82B/82		01/16/01	01/20/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/04/00	7587-004	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
C01-008-50	C01-008		12/06/00	7587-004	H		01/02/01	01/20/01	MCM	Tritium in Water
B10LV7			R012027-05	7587-005	82B/82		01/18/01	01/20/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/04/00	7587-005	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
C01-008-52	C01-008		12/06/00	7587-005	H		01/02/01	01/20/01	MCM	Tritium in Water
Method Blank			R012027-07	7587-007	82B/82		01/18/01	01/20/01	MCM	Gross Beta in Water
		WATER		7587-007	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
	C01-008			7587-007	H		01/03/01	01/20/01	MCM	Tritium in Water
Lab Control Sample			R012027-06	7587-006	82B/82		01/18/01	01/20/01	MCM	Gross Beta in Water
		WATER		7587-006	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
	C01-008			7587-006	H		01/03/01	01/20/01	MCM	Tritium in Water
Duplicate (R012027-02)			R012027-08	7587-008	82B/82		01/19/01	01/23/01	MCM	Gross Beta in Water
Hanford Site		WATER	12/05/00	7587-008	88A/88		01/16/01	01/20/01	MCM	Gross Alpha in Water
	C01-008		12/06/00	7587-008	H		01/03/01	01/23/01	MCM	Tritium in Water
Spike (R012027-02)			R012027-09	7587-009	H		01/03/01	01/23/01	MCM	Tritium in Water
Hanford Site		WATER	12/05/00							
	C01-008		12/06/00							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

SDG 7587
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1165

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
82B/82	C01-008	Gross Beta in Water	900.0_ALPHABETA_GPC	5			1	1	1		8
88A/88	C01-008	Gross Alpha in Water	900.0_ALPHABETA_GPC	5			1	1	1		8
H	C01-008	Tritium in Water	906.0_H3_LSC	5			1	1	1	1	9
TOTALS				15			3	3	3	1	25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-06

Lab Control Sample

LAB CONTROL SAMPLE

SDG	7587	Client/Case no	Hanford SDG H1165
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
Lab sample id	R012027-06	Client sample id	Lab Control Sample
Dept sample id	7587-006	Material/Matrix	WATER
		SAF No	C01-008

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	71.1	4.9	1.0	3.0		88A	67.0	2.7	106	66-134	70-130
Gross Beta	72.6	3.6	2.7	4.0		82B	73.3	2.9	99	76-124	70-130
Tritium	9270	410	310	400		H	9300	370	100	83-117	80-120

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-LCS 37002

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LCS
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-08 B10LD7

DUPLICATE

SDG 7587		Client/Case no Hanford	SDG H1165
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id R012027-08	Lab sample id R012027-02	Client sample id B10LD7	
Dept sample id 7587-008	Dept sample id 7587-002	Location/Matrix Hanford Site	WATER
	Received 12/06/00	Collected 12/05/00 10:36	
		Custody/SAF No C01-008-38	C01-008

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	0.601	1.2	2.1	3.0	U	88A	0.903	0.96	1.5	U	-		
Gross Beta	12.1	1.7	1.9	4.0		82B	4.55	1.8	2.8		91	57	
Tritium	66.6	95	160	400	U	H	131	100	160	U	-		

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-DUP#2 37004

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-09 B10LD7

MATRIX SPIKE

SDG	7587			Client/Case no	Hanford SDG H1165
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R012027-09	Lab sample id	R012027-02	Client sample id	B10LD7
Dept sample id	7587-009	Dept sample id	7587-002	Location/Matrix	Hanford Site WATER
		Received	12/06/00	Collected	12/05/00 10:36
				Custody/SAF No	C01-008-38 C01-008

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	17700	390	170	400		H	17900	720	131	100	98	84-116	60-140

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-MS#2 37005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-03 B10LC7

DATA SHEET

SDG	7587	Client/Case no	Hanford	SDG H1165	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012027-03	Client sample id	B10LC7		
Dept sample id	7587-003	Location/Matrix	Hanford Site	WATER	
Received	12/06/00	Collected	12/04/00 12:57		
		Custody/SAF No	C01-008-44	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.418	1.2	2.6	3.0	U	88A
Gross Beta	12587-47-2	6.88	1.6	2.0	4.0		82B
Tritium	10028-17-8	117	96	160	400	U	H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-02 B10LD7

DATA SHEET

SDG	7587	Client/Case no	Hanford	SDG H1165	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012027-02	Client sample id	B10LD7		
Dept sample id	7587-002	Location/Matrix	Hanford Site	WATER	
Received	12/06/00	Collected	12/05/00 10:36		
		Custody/SAF No	C01-008-38	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.903	0.96	1.5	3.0	U	88A
Gross Beta	12587-47-2	4.55	1.8	2.8	4.0		82B
Tritium	10028-17-8	131	100	160	400	U	H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-01 B10LJ5

DATA SHEET

SDG	7587	Client/Case no	Hanford	SDG H1165	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012027-01	Client sample id	B10LJ5		
Dept sample id	7587-001	Location/Matrix	Hanford Site	WATER	
Received	12/06/00	Collected	12/05/00 11:49		
		Custody/SAF No	C01-008-36	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.86	1.7	2.5	3.0	U	88A
Gross Beta	12587-47-2	5.94	1.5	1.9	4.0		82B
Tritium	10028-17-8	1700	150	160	400		H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-04 B10LV5

DATA SHEET

SDG	7587	Client/Case no	Hanford	SDG H1165	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012027-04	Client sample id	B10LV5		
Dept sample id	7587-004	Location/Matrix	Hanford Site	WATER	
Received	12/06/00	Collected	12/04/00 09:55		
		Custody/SAF No	C01-008-50	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.073	0.71	1.4	3.0	U	88A
Gross Beta	12587-47-2	4.34	1.8	2.8	4.0		82B
Tritium	10028-17-8	7.31	91	150	400	U	H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

R012027-05 B10LV7

DATA SHEET

SDG	7587	Client/Case no	Hanford	SDG H1165	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012027-05	Client sample id	B10LV7		
Dept sample id	7587-005	Location/Matrix	Hanford Site	WATER	
Received	12/06/00	Collected	12/04/00 11:17		
		Custody/SAF No	C01-008-52	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.649	1.1	1.9	3.0	U	88A
Gross Beta	12587-47-2	10.1	1.8	2.2	4.0		82B
Tritium	10028-17-8	14.6	91	150	400	U	H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test 82B Matrix WATER
SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1165

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 6962-186								
B10LC7	R012027-03	82		7587-003	6.88			
B10LD7	R012027-02	82		7587-002	4.55			
B10LJ5	R012027-01	82		7587-001	5.94			
B10LV5	R012027-04	82		7587-004	4.34			
B10LV7	R012027-05	82		7587-005	10.1			
BLK (QC ID=37003)	R012027-07	82		7587-007	U			
LCS (QC ID=37002)	R012027-06	82		7587-006	ok			
Duplicate (R012027-02)	R012027-08	82		7587-008	OUT			
Nominal values and limits from method				RDLs (pCi/L)	4.0			
100HR3 IAM (1&2) GW Mon.-Nov. 2000						Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-186	2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 186															
B10LC7	R012027-03	82		2.0	0.300			139		100			43	12/27/00	01/16	GRB-107
B10LD7	R012027-02	82		2.8	0.300			78		100			44	12/27/00	01/18	GRB-114
B10LJ5	R012027-01	82		1.9	0.300			107		100			42	12/27/00	01/16	GRB-105
B10LV5	R012027-04	82		2.8	0.300			60		100			43	12/27/00	01/16	GRB-114
B10LV7	R012027-05	82		2.2	0.300			115		100			45	12/27/00	01/18	GRB-115
BLK (QC ID=37003)	R012027-07	82		2.1	0.300			27		100				12/27/00	01/18	GRB-115
LCS (QC ID=37002)	R012027-06	82		2.7	0.300			28		100				12/27/00	01/18	GRB-114
Duplicate (R012027-02) (QC ID=37004)	R012027-08	82		1.9	0.300			83		100			45	12/27/00	01/19	GRB-105
Nominal values and limits from method				4.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-120	Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD	MDA	2.3 ± 0.80
FOR 8 SAMPLES	RESIDUE	80 ± 81

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Test 88A Matrix WATER
SDG 7587
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1165

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6962-186						
B10LC7	R012027-03	88		7587-003	U	
B10LD7	R012027-02	88		7587-002	U	
B10LJ5	R012027-01	88		7587-001	U	
B10LV5	R012027-04	88		7587-004	U	
B10LV7	R012027-05	88		7587-005	U	
BLK (QC ID=37003)	R012027-07	88		7587-007	U	
LCS (QC ID=37002)	R012027-06	88		7587-006	ok	
Duplicate (R012027-02)	R012027-08	88		7587-008	-	U

Nominal values and limits from method RDLs (pCi/L) 3.0
100HR3 IAM (1&2) GW Mon.-Nov. 2000

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-186	2σ prep error 20.0 % Reference Lab Notebook 6962 pg. 186															
B10LC7	R012027-03	88		2.6	0.300			143		100			43	12/23/00	01/16	GRB-107
B10LD7	R012027-02	88		1.5	0.300			82		100			41	12/23/00	01/15	GRB-116
B10LJ5	R012027-01	88		2.5	0.300			122		100			41	12/23/00	01/15	GRB-115
B10LV5	R012027-04	88		1.4	0.300			54		100			43	12/23/00	01/16	GRB-108
B10LV7	R012027-05	88		1.9	0.300			119		100			43	12/23/00	01/16	GRB-110
BLK (QC ID=37003)	R012027-07	88		1.1	0.300			27		100				12/23/00	01/16	GRB-112
LCS (QC ID=37002)	R012027-06	88		1.0	0.300			26		100				12/23/00	01/16	GRB-111
Duplicate (R012027-02) (QC ID=37004)	R012027-08	88		2.1	-0.300			87		100			42	12/23/00	01/16	GRB-113
Nominal values and limits from method				3.0	0.300			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD MDA 1.8 ± 1.2
FOR 8 SAMPLES RESIDUE 82 ± 88

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/23/01

Test H Matrix WATER
SDG 7587
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1165

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6962-186						
B10LC7	R012027-03			7587-003	U	
B10LD7	R012027-02			7587-002	U	
B10LJ5	R012027-01			7587-001	1700	
B10LV5	R012027-04			7587-004	U	
B10LV7	R012027-05			7587-005	U	
BLK (QC ID=37003)	R012027-07			7587-007	U	
LCS (QC ID=37002)	R012027-06			7587-006	ok	
Duplicate (R012027-02)	R012027-08			7587-008	-	U
Spike (R012027-02)	R012027-09			7587-009	ok	

Nominal values and limits from method RDLs (pCi/L) 400
100HR3 IAM (1&2) GW Mon.-Nov. 2000

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-186	2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 186															
B10LC7	R012027-03			160	0.0500			20		100			29	12/30/00	01/02	LSC-007
B10LD7	R012027-02			160	0.0500			20		100			28	12/30/00	01/02	LSC-007
B10LJ5	R012027-01			160	0.0500			20		100			28	12/30/00	01/02	LSC-007
B10LV5	R012027-04			150	0.0500			20		100			29	12/30/00	01/02	LSC-007
B10LV7	R012027-05			150	0.0500			20		100			29	12/30/00	01/02	LSC-007
BLK (QC ID=37003)	R012027-07			310	0.0500			10		100				12/30/00	01/03	LSC-007
LCS (QC ID=37002)	R012027-06			310	0.0500			10		100				12/30/00	01/03	LSC-007
Duplicate (R012027-02) (QC ID=37004)	R012027-08			160	0.0500			20		100			29	12/30/00	01/03	LSC-007
Spike (R012027-02) (QC ID=37005)	R012027-09			170	0.0500			18		100			29	12/30/00	01/03	LSC-007
Nominal values and limits from method				400	0.0500					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/23/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1165

Test H	Matrix WATER
SDG 7587	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1165	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-210	Tritium in Water Samples by Distillation, rev 3

AVERAGES ± 2 SD	MDA 190	± 130
FOR 9 SAMPLES	YIELD 18	± 9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/23/01

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-36

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE H1165 (7587)	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-SHWS-139	Ice Chest No.: SML 578 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1036
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LJ4 (F) ✓		W	12-5-00	1149	1x500-mL G/P ✓	ICP Metals - 6010A RCRA GW ✓	HNO3 to pH <2
B10LJ5 ✓		W	↓	↓	1x500-mL G/P ✓	ICP Metals - 6010A RCRA GW ✓	HNO3 to pH <2
B10LJ5 ✓		W			1x500-mL P ✓	IC Anions - 300.0 ✓	Cool 4C
B10LJ5 ✓		W			1x20-mL P	Activity Scan ✓	None
B10LJ5 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B10LJ5 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B10LJ5 ✓		W	↓	↓	1x250-mL P	Tritium - H3 ✓	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D.R. Brewington	DEC 05 2000 1400	R. L. Ex	12-05-00
FED. EXPRESS	12-06-00 10:AM	E. Figuro	12-06-00

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-38

Page 1 of 1

Collector D. R. BREWINGTON	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE H1165 (7587)	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WM-SAWS-1139	Ice Chest No. SML 579 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 1036
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LD6 (F)		W	12-5-00	1036	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD7		W			1x20-mL P	Activity Scan	None
B10LD7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LD7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LD7		W			1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D. R. Brewington	DEC 05 2000 1400	Fed Ex	12-05-00
Fed. Express	12-06-00 10A	E. Jeguro	12-06-00 10:6

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-44

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE H1165 (7587)	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-5445-139	Ice Chest No.: SML 296 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1025
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LC6 (F)		W	12-4-00	1257	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LC7		W			1x20-mL P	Activity Scan	None
B10LC7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LC7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LC7		W			1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D.R. Brewington	12/5/00 1400	Fed Ex	12-05-00
FED-EXPRESS	12-06-00	E. Regnus	12-06-00 10:00

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-50

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE H1165 (7587)	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No.: WM-SHWS-1439	Ice Chest No.: SML 296 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1025
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LV4 (F)		W	12-4-00	0955	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LV5		W			1x20-mL P	Activity Scan	None
B10LV5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LV5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LV5		W			1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D.R. Brewington	12/5/00 1400	Fed Ex	12-05-00
FED EXPRESS	10-06-00 10 AM	E. Pegnum	12-06-00 10 AM

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-52

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE H1165 (7587)	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING NOVEMBER, 2000	Logbook No.: WM-SHWS-1139	Ice Chest No.: SIMC 276 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954/1025
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LV6 (F) ✓		W	12-4-00	1117	1x500-mL G/P ✓	ICP Metals - 6010A RCRA GW ✓	HNO3 to pH <2
B10LV7 ✓		W	↓	↓	1x500-mL G/P ✓	ICP Metals - 6010A RCRA GW ✓	HNO3 to pH <2
B10LV7 ✓		W			1x500-mL P ✓	IC Anions - 300.0 ✓	Cool 4C
B10LV7 ✓		W			1x20-mL P	Activity Scan ✓	None
B10LV7 ✓		W			2x1000-mL G/P	Gross Alpha ✓	HNO3 to pH <2
B10LV7 ✓		W			2x1000-mL G/P	Gross Beta ✓	HNO3 to pH <2
B10LV7 ✓		W			1x250-mL P	Tritium - H3 ✓	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D.R. Brewington	12/5/00 1400	Fed Ex	12-05-00
FED. EXPRESS	12-06-00 10 AM	E. Figuro	12-06- 10 AM

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

ThermoRetec
Richmond Laboratory

Analytical Services

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: (WMTS) BECHTEL HANFORD (PNNL) Date:

Ice chest # or description	SML-296					
Thermometer: time in	10:15					
Thermometer: time out	11:10					
Thermometer reading	4°C					
Thermometer number	2132					
Correction factor	NONE					
Actual temperature*	———					
Custody seals on ice chest intact?	Yes					
Custody seals dated ?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: E. Deguro

Comments: SAMPLES ARE FINE

Form SCP-01.1, 09-25-00
Previous editions of this form may be used.

"50 years of quality nuclear services"

ThermoRetec
Richmond Laboratory

Analytical Services

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: (WMTS) BECHTEL HANFORD Date: 12-06-00 10:AM

Ice chest # or description	SML-579					
Thermometer: time in	10:15					
Thermometer: time out	11:15					
Thermometer reading	4°C					
Thermometer number	6356					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	Yes					
Custody seals dated ?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: E. Segura

Comments: SAMPLES ARE FINE -

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: (WMTS) BECHTEL HANFORD (PNNL) Date/Time received 12-06-00 10:AM

CoC No. C01-008-36, C01-008-38, C01-008-44 & C01-008-52.

Container I.D. No. _____ Requested TAT (Days) _____ P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 10
7. Number of containers per sample: Check (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 Pegurso Date: 12-06-00 Time: 10:Am

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LC6						
SILVER, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
SILVER, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
SILVER, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	001	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	001 REP	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	001 MS	W	99L1842	12/04/00	12/20/00	12/27/00
B10LC7						
SILVER, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	002	W	99L1842	12/04/00	12/20/00	12/27/00
B10LD6						
SILVER, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
ALUMINUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
BARIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
CALCIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
CADMIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
COBALT, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
CHROMIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
COPPER, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
IRON, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
POTASSIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
MANGANESE, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
SODIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
NICKEL, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
ANTIMONY, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
STRONTIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
VANADIUM, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
ZINC, TOTAL	003	W	99L1842	12/05/00	12/20/00	12/27/00
B10LD7						
SILVER, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
ALUMINUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
BARIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
CALCIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
CADMIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
COBALT, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
COPPER, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
IRON, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
POTASSIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
MANGANESE, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
SODIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
NICKEL, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
ANTIMONY, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
STRONTIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
VANADIUM, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
ZINC, TOTAL	004	W	99L1842	12/05/00	12/20/00	12/27/00
B10LJ4						
SILVER, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
ALUMINUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
BARIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
CALCIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
CADMIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
COBALT, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
CHROMIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
COPPER, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
IRON, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
POTASSIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
MANGANESE, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
SODIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
NICKEL, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
ANTIMONY, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
STRONTIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
VANADIUM, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
ZINC, TOTAL	005	W	99L1842	12/05/00	12/20/00	12/27/00
B10LJ5						
SILVER, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
BARIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
CALCIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
CADMIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
COBALT, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
CHROMIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
COPPER, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
IRON, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
POTASSIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
MANGANESE, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
SODIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
NICKEL, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
ANTIMONY, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
STRONTIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
VANADIUM, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
ZINC, TOTAL	006	W	99L1842	12/05/00	12/20/00	12/27/00
B10LV4						
SILVER, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	007	W	99L1842	12/04/00	12/20/00	12/27/00
B10LV5						
SILVER, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	008	W	99L1842	12/04/00	12/20/00	12/27/00
B10LV6						
SILVER, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	009	W	99L1842	12/04/00	12/20/00	12/27/00
B10LV7						
SILVER, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
ALUMINUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
BARIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
BERYLLIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
CALCIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
CADMIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
COBALT, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
CHROMIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
COPPER, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
IRON, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
POTASSIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
MAGNESIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
MANGANESE, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
SODIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
NICKEL, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
ANTIMONY, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
STRONTIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
VANADIUM, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00
ZINC, TOTAL	010	W	99L1842	12/04/00	12/20/00	12/27/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
SILVER, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
ALUMINUM LABORTORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
ALUMINUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
BARIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
BERYLLIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
CALCIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
CALCIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
CADMIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
CADMIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
COBALT LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
COBALT, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
CHROMIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
CHROMIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
COPPER LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
COPPER, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
IRON LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
IRON, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
POTASSIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
POTASSIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
MAGNESIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
MANGANESE LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
MANGANESE, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
SODIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
SODIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
NICKEL LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
NICKEL, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
ANTIMONY LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
ANTIMONY, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
STRONTIUM LCS STANDA	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
STRONTIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
VANADIUM LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
VANADIUM, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00
ZINC LABORATORY	LC1 BS	W	99L1842	N/A	12/20/00	12/27/00
ZINC, TOTAL	MB1	W	99L1842	N/A	12/20/00	12/27/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD C01-008
RFW#: 0012L518
SDG/SAF#: H1165/C01-008

W.O.#: 10985-001-001-9999-00
Date Received: 12-08-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 10 water samples.

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

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

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

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

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

7. The preparation/method blank for 1 analytes was outside 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.

   a.) The MB result for Iron was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

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 32 pages.

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10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-15-01
Date

gmb/m12-518

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00121518

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10LC6	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	46.3		UG/L	19.1	1.0
		Barium, Total	90.5		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	100000		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	141		UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	11.6		UG/L	3.8	1.0
		Potassium, Total	6410		UG/L	303	1.0
		Magnesium, Total	3010		UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	7480		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	800		UG/L	5.5	1.0
		Vanadium, Total	4.8	u	UG/L	4.8	1.0
		Zinc, Total	9.9		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LC7	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	142		UG/L	19.1	1.0
		Barium, Total	91.6		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	99400		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	146		UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	251		UG/L	3.8	1.0
		Potassium, Total	6340		UG/L	303	1.0
		Magnesium, Total	3050		UG/L	27.4	1.0
		Manganese, Total	13.9		UG/L	2.3	1.0
		Sodium, Total	7300		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	790		UG/L	5.5	1.0
		Vanadium, Total	4.8	u	UG/L	4.8	1.0
		Zinc, Total	4.5		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B10LD6	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	86.3		UG/L	19.1	1.0
		Barium, Total	69.7		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	49700		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	4.9	u	UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	113		UG/L	3.8	1.0
		Potassium, Total	3990		UG/L	303	1.0
		Magnesium, Total	14500		UG/L	27.4	1.0
		Manganese, Total	11.0		UG/L	2.3	1.0
		Sodium, Total	10900		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	335		UG/L	5.5	1.0
		Vanadium, Total	14.4		UG/L	4.8	1.0
		Zinc, Total	27.6		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B10LD7	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.1	u	UG/L	19.1	1.0
		Barium, Total	66.7		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	48300		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	5.7		UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	142		UG/L	3.8	1.0
		Potassium, Total	3960		UG/L	303	1.0
		Magnesium, Total	14000		UG/L	27.4	1.0
		Manganese, Total	12.9		UG/L	2.3	1.0
		Sodium, Total	10800		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	321		UG/L	5.5	1.0
		Vanadium, Total	13.6		UG/L	4.8	1.0
		Zinc, Total	34.2		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B10LJ4	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.1	u	UG/L	19.1	1.0
		Barium, Total	72.3		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	80500		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	280		UG/L	4.9	1.0
		Copper, Total	5.2		UG/L	2.6	1.0
		Iron, Total	42.3		UG/L	3.8	1.0
		Potassium, Total	4820		UG/L	303	1.0
		Magnesium, Total	18000		UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	10700		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	405		UG/L	5.5	1.0
		Vanadium, Total	8.9		UG/L	4.8	1.0
		Zinc, Total	21.0		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B10LJ5	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.1	u	UG/L	19.1	1.0
		Barium, Total	74.6		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	82100		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	287		UG/L	4.9	1.0
		Copper, Total	7.1		UG/L	2.6	1.0
		Iron, Total	122		UG/L	3.8	1.0
		Potassium, Total	4870		UG/L	303	1.0
		Magnesium, Total	18400		UG/L	27.4	1.0
		Manganese, Total	5.9		UG/L	2.3	1.0
		Sodium, Total	11000		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	416		UG/L	5.5	1.0
		Vanadium, Total	9.2		UG/L	4.8	1.0
		Zinc, Total	22.0		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B10LV4	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.1	u	UG/L	19.1	1.0
		Barium, Total	79.0		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	42400		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	5.5		UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	31.9		UG/L	3.8	1.0
		Potassium, Total	9780		UG/L	303	1.0
		Magnesium, Total	15600		UG/L	27.4	1.0
		Manganese, Total	22.7		UG/L	2.3	1.0
		Sodium, Total	33200		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	356		UG/L	5.5	1.0
		Vanadium, Total	34.1		UG/L	4.8	1.0
		Zinc, Total	38.4		UG/L	2.7	1.0

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INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	B10LV5	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.9		UG/L	19.1	1.0
		Barium, Total	71.0		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	38800		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	9.7		UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	85.5		UG/L	3.8	1.0
		Potassium, Total	8820		UG/L	303	1.0
		Magnesium, Total	14300		UG/L	27.4	1.0
		Manganese, Total	21.6		UG/L	2.3	1.0
		Sodium, Total	30100		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	323		UG/L	5.5	1.0
		Vanadium, Total	30.3		UG/L	4.8	1.0
		Zinc, Total	14.7		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B10LV6	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	19.1	u	UG/L	19.1	1.0
		Barium, Total	42.0		UG/L	3.0	1.0
		Bery					
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	32000		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	61.5		UG/L	4.9	1.0
		Copper, Total	2.9		UG/L	2.6	1.0
		Iron, Total	28.5		UG/L	3.8	1.0
		Potassium, Total	2710		UG/L	303	1.0
		Magnesium, Total	4950		UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	4500		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	129		UG/L	5.5	1.0
		Vanadium, Total	6.5		UG/L	4.8	1.0
		Zinc, Total	10.3		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	B10LV7	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	88.2		UG/L	19.1	1.0
		Barium, Total	45.2		UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	34500		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	72.0		UG/L	4.9	1.0
		Copper, Total	3.2		UG/L	2.6	1.0
		Iron, Total	166		UG/L	3.8	1.0
		Potassium, Total	2830		UG/L	303	1.0
		Magnesium, Total	5330		UG/L	27.4	1.0
		Manganese, Total	5.8		UG/L	2.3	1.0
		Sodium, Total	4710		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	137		UG/L	5.5	1.0
		Vanadium, Total	4.8	u	UG/L	4.8	1.0
		Zinc, Total	3.2		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1842-MB1	Silver, Total	2.5	u	UG/L	2.5	1.0
		Aluminum, Total	40.4		UG/L	19.1	1.0
		Barium, Total	3.0	u	UG/L	3.0	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	17.8		UG/L	15.4	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	5.6	u	UG/L	5.6	1.0
		Chromium, Total	4.9	u	UG/L	4.9	1.0
		Copper, Total	2.6	u	UG/L	2.6	1.0
		Iron, Total	39.0		UG/L	3.8	1.0
		Potassium, Total	303	u	UG/L	303	1.0
		Magnesium, Total	27.4	u	UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	117		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	17.0	u	UG/L	17.0	1.0
		Strontium, Total	5.5	u	UG/L	5.5	1.0
		Vanadium, Total	4.8	u	UG/L	4.8	1.0
		Zinc, Total	4.7		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10LC6	Silver, Total	51.0	2.5 u	50.0	102.0	1.0
		Aluminum, Total	2030	46.3	2000	99.4	1.0
		Barium, Total	2050	90.5	2000	98.1	1.0
		Beryllium, Total	48.7	0.60u	50.0	97.4	1.0
		Calcium, Total	126000	100000	25000	103.6*	1.0
		Cadmium, Total	43.0	3.4 u	50.0	86.0	1.0
		Cobalt, Total	500	5.6 u	500	100	1.0
		Chromium, Total	335	141	200	96.9	1.0
		Copper, Total	249	2.6 u	250	99.6	1.0
		Iron, Total	999	11.6	1000	98.8	1.0
		Potassium, Total	31600	6410	25000	100.8	1.0
		Magnesium, Total	28000	3010	25000	99.9	1.0
		Manganese, Total	490	2.3 u	500	98.1	1.0
		Sodium, Total	32800	7480	25000	101.2	1.0
		Nickel, Total	493	12.5 u	500	98.7	1.0
		Antimony, Total	533	17.0 u	500	106.5	1.0
		Strontium, Total	1720	800	1000	92.1	1.0
		Vanadium, Total	491	4.8 u	500	98.2	1.0
		Zinc, Total	489	9.9	500	95.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10LC6	Silver, Total	2.5 u	2.5 u	NC	1.0
		Aluminum, Total	46.3	27.9	49.6	1.0
		Barium, Total	90.5	92.7	2.4	1.0
		Beryllium, Total	0.60u	0.60u	NC	1.0
		Calcium, Total	100000	106000	5.7	1.0
		Cadmium, Total	3.4 u	3.4 u	NC	1.0
		Cobalt, Total	5.6 u	5.6 u	NC	1.0
		Chromium, Total	141	150	5.7	1.0
		Copper, Total	2.6 u	2.6 u	NC	1.0
		Iron, Total	11.6	11.1	4.4	1.0
		Potassium, Total	6410	6840	6.5	1.0
		Magnesium, Total	3010	3130	3.9	1.0
		Manganese, Total	2.3 u	4.9	~~NC~~ 200	1.0
		Sodium, Total	7480	7690	2.7	1.0
		Nickel, Total	12.5 u	12.5 u	NC	1.0
		Antimony, Total	17.0 u	17.0 u	NC	1.0
		Strontium, Total	800	831	3.8	1.0
		Vanadium, Total	4.8 u	4.8 u	NC	1.0
		Zinc, Total	9.9	2.7 u	~~NC~~ 200	1.0

MT 1/15/01

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/10/01

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1842-LC1	Silver, LCS	493	500	UG/L	98.6
		Aluminum, LCS	5100	5000	UG/L	102.1
		Barium, LCS	4980	5000	UG/L	99.5
		Beryllium, LCS	249	250	UG/L	99.7
		Calcium, LCS	24800	25000	UG/L	99.2
		Cadmium, LCS	225	250	UG/L	90.0
		Cobalt, LCS	2510	2500	UG/L	100.3
		Chromium, LCS	496	500	UG/L	99.1
		Copper, LCS	1240	1250	UG/L	99.2
		Iron, LCS	5030	5000	UG/L	100.5
		Potassium, LCS	24800	25000	UG/L	99.3
		Magnesium, LCS	24800	25000	UG/L	99.4
		Manganese, LCS	747	750	UG/L	99.6
		Sodium, LCS	25300	25000	UG/L	101.2
		Nickel, LCS	2010	2000	UG/L	100.7
		Antimony, LCS	2990	3000	UG/L	99.6
		Strontium, LCS	4820	5000	UG/L	96.3
		Vanadium, LCS	2500	2500	UG/L	100.1
		Zinc, LCS	995	1000	UG/L	99.5

RECRA LabNet Use Only

00121518

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client ~~Hanford~~ TRU-Hanford SAF C01-008

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spc Del Std TAT 30 day

Date Rec'd 12-8-00 Date Due 1-7-01

Account #

		A	B
Refrigerator #		5	5
#/Type Container	Liquid	1PL	1PL
	Solid		
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	
ANALYSES REQUESTED → ORGANIC: VOA			
ORGANIC: BNA			
ORGANIC: Pest/PCB			
ORGANIC: Herb			
INORG: Total Metal		① Met	① IC
INORG: CN			
INORG: Anions			

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	B10LC6			W	12-4-00	1257
002	C7				↓	↓
003	D6				12-5-00	1036
004	D7					↓
005	I4					1149
006	I5				↓	↓
007	V4				12-4-00	0955
008	V5					↓
009	V6					1117
010	V7				↓	↓

Special Instructions: SOS C01-008

Run Matrix QC

DATE/REVISIONS:

Met ① 1. Al, Ag, Ba, Br, Ca, Cd, Co, Cr, Cu, Fe, K, Mg,

↓ 2. Mn, Ni, Na, Sb, Se, V, Zn

IC ① 3. Br, Cl, Fl, NO2, NO3, PO4, SO4

4.

5.

6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # Bob Baker
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. 4.9 °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	12-8-00	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

8914 8983 1934

TRU-HANFORD

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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG 41165

C.O.C. # C01-008

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No.: WM-SAWS-1139	Ice Chest No.: SML 579 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1036
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
" "

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservativ
B10LD6 (F)		W	12-5-00	1036	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <
B10LD7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <
B10LD7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD7		W			1x20-mL P	Activity Scan	None
B10LD7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <
B10LD7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <
B10LD7		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D. R. Brewington		DEC 05 2000 1400	Fed Ex			12-05-00
Fed. Express			12-06-00 10A	E. Segura			12-06-00 16:4
JR Cross	JR Cross		12-7-00 16:00	Fed Ex			12-7-00
Fed Ex			12-8-00 1000				12-8-00 1000

Matrix *

S	= Soil	DS	= Drum
SE	= Sediment	DL	= Drum
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegeta
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1165

C.O.C. # C01-008

Page 1 of 1

Collector: D. H. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No.: WM-5445-139	Ice Chest No.: SML 29C Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1025
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservativ
B10LC6 (F)		W	12-4-00	1257	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LC7		W			(1)x20-mL P	Activity Scan	None
B10LC7		W			(2)x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LC7		W			(2)x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LC7		W			(1)x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		12/5/00 1400	Fed Ex			
JR Corso	JR Corso		12-7-00 1612	Fed Ex			12-7-00
Fed Ex			12-8-00 1000	P. Hussong			12-8-00 1000

Matrix *

S = Soil		DS = Drum Sol	
SE = Sediment		DL = Drum Liq	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H116 S

C.O.C. # C01-008

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER 2000	Logbook No.: WM-SHWS-139	Ice Chest No.: SML 578 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1036
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LJ4 (F)		W	12-5-00	1149	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LJ5		W			1x20-mL P	Activity Scan	None
B10LJ5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LJ5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LJ5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		DEC 0 5 2000 1400	Fed Ex			12-05-00
FED EXPRESS			12-06-00 10:AM	E. Figuro			12-06- 10:A
J R Carter	for R Boran		12-7-00 16:00	Fed Ex			12-7-00
Fed Ex			12-8-00 1000	V. Hernandez			12-8-00 1000

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG 41165

C.O.C. # C01-008

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-SHWS-1139	Ice Chest No.: SML 296 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 102
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ N
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservati
B10LV4 (F)		W	12-4-00	0955	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH -
B10LV5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH -
B10LV5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LV5		W			1x20-mL P	Activity Scan	None
B10LV5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH -
B10LV5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH -
B10LV5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		12/5/00 1400	Fed Ex			12-05-00
FED EXPRESS			10-06-00 10A	E. Lagunu			12-06-00 10
JR Corse	JR Corse		12-7-00 16:00	Fed Ex			12-7-00
Fed Ex			12-8-00 1000	V. Hernandez			12-8-00 1000

Matrix *

S	= Soil	DS	= Drum S
SE	= Sediment	DL	= Drum L
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegeta
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1165

C.O.C. # C01-008

Page 1 of 1

Collector D. R. BREWINGTON	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No. WM-SHWS-1139	Ice Chest No. SMC 296 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT VEHICLE	Bill of Lading/Air Bill No. 4235 7954/102
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservat
B10LV6 (F)		W	12-4-00	1117	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH
B10LV7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH
B10LV7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LV7		W			1x20-mL P	Activity Scan	None
B10LV7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH
B10LV7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH
B10LV7		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		12/5/00 1410	Fed Ex			12-05-00
Relinquished By			Date/Time	Received By			Date/Time
FED. EXPRESS			12-06-00 10:00	E. Figuro			12-06- 10 AM
Relinquished By			Date/Time	Received By			Date/Time
JR Corso	JR Corso		12-7-00 16:00	Fed Ex			12-7-00
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			12-8-00 1000	[illegible]			12-8-00 1000

Matrix *

S	= Soil	DS	= Drum
SE	= Sediment	DL	= Drum
SO	= Solid	T	= Tissu
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liqui
O	= Oil	V	= Vege
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LC7						
BROMIDE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
CHLORIDE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
FLUORIDE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRITE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRATE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
PHOSPHATE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
SULFATE BY IC	002	W	00LIC079	12/04/00	12/13/00	12/13/00
B10LD7						
BROMIDE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
CHLORIDE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
FLUORIDE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
NITRITE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
NITRATE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
PHOSPHATE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
SULFATE BY IC	004	W	00LIC079	12/05/00	12/13/00	12/13/00
B10LJ5						
BROMIDE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
CHLORIDE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
FLUORIDE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
NITRITE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
NITRATE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
PHOSPHATE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
SULFATE BY IC	006	W	00LIC079	12/05/00	12/13/00	12/13/00
B10LV5						
BROMIDE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
CHLORIDE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
FLUORIDE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRITE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRATE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
SULFATE BY IC	008	W	00LIC079	12/04/00	12/13/00	12/13/00
B10LV7						
BROMIDE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
BROMIDE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
BROMIDE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
CHLORIDE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
CHLORIDE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
CHLORIDE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
FLUORIDE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
FLUORIDE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
FLUORIDE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRITE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRITE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRITE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRATE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRATE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
NITRATE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
PHOSPHATE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
PHOSPHATE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
PHOSPHATE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00
SULFATE BY IC	010	W	00LIC079	12/04/00	12/13/00	12/13/00
SULFATE BY IC	010 REP	W	00LIC079	12/04/00	12/13/00	12/13/00
SULFATE BY IC	010 MS	W	00LIC079	12/04/00	12/13/00	12/13/00

LAB QC:

BROMIDE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
BROMIDE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
CHLORIDE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
CHLORIDE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
FLUORIDE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
FLUORIDE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
NITRITE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
NITRITE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
NITRATE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1165

DATE RECEIVED: 12/08/00 RFW LOT # :0012L518

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
PHOSPHATE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
PHOSPHATE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00
SULFATE BY IC	MB1	W	00LIC079	N/A	12/13/00	12/13/00
SULFATE BY IC	MB1 BS	W	00LIC079	N/A	12/13/00	12/13/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C01-008 H1165
RFW# : 0012L518

W.O. # : 10985-001-001-9999-00
Date Received: 12-08-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 5 water samples.

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite and Phosphate which were received past hold.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits.

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

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.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-22-01
Date

njp\i12-518

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.

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.4		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (__9014__9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		
Other:		**Method:**	

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518
WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LC7	Bromide by IC	2.5 u	MG/L	2.5	10.0
		Chloride by IC	50.4	MG/L	2.5	10.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	2.5 u	MG/L	2.5	10
		Nitrate by IC	86	MG/L	2.5	10
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	118	MG/L	5.0	20.0
-004	B10LD7	Bromide by IC	0.50 u	MG/L	0.50	2.0
		Chloride by IC	7.8	MG/L	0.50	2.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	26	MG/L	2.5	10
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	74.8	MG/L	2.5	10.0
-006	B10LJ5	Bromide by IC	2.5 u	MG/L	2.5	10.0
		Chloride by IC	23.2	MG/L	2.5	10.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	51	MG/L	2.5	10
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	114	MG/L	5.0	20.0
-008	B10LV5	Bromide by IC	0.50 u	MG/L	0.50	2.0
		Chloride by IC	5.4	MG/L	1.2	5.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	2.2	MG/L	0.50	2.0
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	65.1	MG/L	2.5	10.0
-010	B10LV7	Bromide by IC	0.50 u	MG/L	0.50	2.0
		Chloride by IC	5.2	MG/L	1.2	5.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	10	MG/L	0.50	2.0
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	22.6	MG/L	2.5	10.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/15/00

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LIC079-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-010	B10LV7	Bromide by IC	23.9	0.00	25.0	95.6	5.0
		Chloride by IC	28.7	5.2	25.0	94.2	5.0
		Fluoride by IC	52.8	0.00	50.0	105.6	5.0
		Nitrite by IC	24	0.50u	25	96.9	5.0
		Nitrate by IC	35	10	25	98.3	5.0
		Phosphate by IC	23.1	0.50u	25.0	92.2	5.0
		Sulfate by IC	121	22.6	100	98.4	20.0
BLANK10	00LIC079-MB1	Bromide by IC	4.9	0.25u	5.0	98.3	1.0
		Chloride by IC	4.7	0.25u	5.0	94.0	1.0
		Fluoride by IC	10.8	0.50u	10.0	108.4	1.0
		Nitrite by IC	4.9	0.25u	5.0	97.1	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.9	1.0
		Phosphate by IC	5.1	0.25u	5.0	101.2	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.5	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1165 RECRA LOT #: 0012L518

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-010REP	B10LV7	Bromide by IC	0.50u	0.50u	NC	2.0
		Chloride by IC	5.2	5.0	3.2	5.0
		Fluoride by IC	1.0 u	1.0 u	NC	2.0
		Nitrite by IC	0.50u	0.50u	NC	2.0
		Nitrate by IC	10	10	0.37	2.0
		Phosphate by IC	0.50u	0.50u	NC	2.0
		Sulfate by IC	22.6	22.2	1.5	10.0

RECRA LabNet Use Only
00121518

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client ~~HANFORD~~ TRU-HANFORD SAF C01-008

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 12-8-00 Date Due 1-7-01

Account #

Refrigerator #																							
												A		B									
#/Type Container	Liquid											6		5									
	Solid											1PL		1PL									
Volume	Liquid											500		500									
	Solid																						
Preservatives												HNO3											
ANALYSES REQUESTED →		ORGANIC										INORG											
		VOA	BNA	Pest/PCB	Herb							TAL Metal	CN	Total Anions									
		RECRA LabNet Use Only																					
												Met ①		IC 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																	
001	B10LC6			W	12-4-00	1257																	
002	C7				↓	↓																	
003	D6				12-5-00	1036																	
004	D7					↓																	
005	I4					1149																	
006	I5					↓																	
007	V4				12-4-00	~~0955~~																	
008	V5					↓																	
009	V6					1117																	
010	V7					↓																	

Special instructions: SAF C01-008

Run Matrix QC

DATE/REVISIONS:

Met ① 1. Al, Ag, Ba, Br, Ca, Cd, Co, Cr, Cu, Fe, K, Mg,

⊥ 2. Mn, Ni, Na, Sb, Sr, V, Zn

IC ① 3. Br, Cl, Fl, NO2, NO3, PO4, SO4

4.

5.

6.

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	12-8-00	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES: 8214 8983 1934

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # [illegible]
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 (NO2 NO3 PH)

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. 4.9 °C

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1165

C.O.C. # C01-008-3

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-SAWS-1139	Ice Chest No.: SIML 579 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1036
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LD6 (F)		W	12-5-00	1036	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD7		W			1x20-mL P	Activity Scan	None
B10LD7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LD7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LD7		W			1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D. R. Brewington	DEC 05 2000 1400	Fed Ex	12-05-00
Fed. Express	12-06-00 10A	E. Jeguro	12-06-00 10:4
JR Corso JR Corso	12-7-00 1611	Fed Ex	12-7-00
Fed Ex	12-8-00 1000	[illegible]	12-8-00 1000

Matrix *

S	= Soil	DS	= Drum Sol
SE	= Sediment	DL	= Drum Liq
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetatio
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1165

C.O.C.# C01-008-3

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No.: WM-5445-139	Ice Chest No.: SML 29C Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1025
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
" "

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LC6 (F)		W	12-4-00	1257	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LC7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LC7		W			1x20-mL P	Activity Scan	None
B10LC7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LC7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LC7		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		12/5/00 1400	Fed Ex			
JR Corso	JR Corso		12-7-00 1600	Fed Ex			12-7-00
Fed Ex			12-8-00 1000	P. Hermanez			12-8-00 1000

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H116 S

C.O.C. # C01-008-3

Page 1 of 1

Collected: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-SHWS-139	Ice Chest No.: SMC 578 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1036
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LJ4 (F)		W	12-5-00	1149	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LJ5		W			1x20-mL P	Activity Scan	None
B10LJ5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LJ5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LJ5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		DEC 05 2000 1400	Fed Ex			12-05-00
FED. EXPRESS			12-06-00 10:AM	E. Figueroa			12-06-00 10:AM
J R Carter	J R Carter		12-7-00 16:00	Fed Ex			12-7-00
Fed Ex			12-8-00 1000	P. Hernandez			12-8-00 1000

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG 41165

C.O.C. # C01-008-

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-008	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WM-SHWS-1139	Ice Chest No.: SML 296 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 1023
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
" "

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LV4 (F)		W	12-4-00	0955	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LV5		W			1x20-mL P	Activity Scan	None
B10LV5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LV5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LV5		W			1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. R. BREWINGTON D.R. Brewington	12/5/00 1400	Fed Ex	12-05-00
FED EXPRESS	10-06-00	E. Legman	12-06-00
JR Cossc JRCossc	12-7-00 1610	Fed Ex	12-7-00
Fed Ex	12-8-00 1000	V. Hernandez	12-8-00 1000

Matrix *

S = Soil		DS = Drum Soli	
SE = Sediment		DL = Drum Liq	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetatio	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1165

C.O.C. # C01-008-16

Page 1 of 1

Collector D. R. BREWINGTON	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WM-SHWS-1139	Ice Chest No. SIHL 296 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT VEHICLE	Bill of Lading/Air Bill No. 4235 7954 1025
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. 06364

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LV6 (F)		W	12-4-00	1117	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV7		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LV7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LV7		W			1x20-mL P	Activity Scan	None
B10LV7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LV7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LV7		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON	D.R. Brewington		12/5/00 1400	Fed Ex			12-05-00
FED. EXPRESS			12-06-00 10.A	E. Arguro			12-06- 10 AM
J R Corso	J R Corso		12-7-00 16:00	Fed Ex			12-7-00
Fed Ex			12.8.00 1000	V. Hennessy			12.8.00 1000

Matrix *

S	= Soil	DS	= Drum Sc
SE	= Sediment	DL	= Drum Li
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetati
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

PAGE 1 Thermo NUtech CHAIN OF CUSTODY ORD # R0-12-028

12/06/00 13:30:53 WORK ID: SAF C01-008 SDG H1165

RCVD: 12/06/00 DUE: 01/20/01 KEEP: 01/20/02 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS		
01A	B10LJ4(F)	RECRA	DISPOS	E011	
02A	B10LJ5	RECRA	DISPOS	E011	E260
02B	B10LJ5 MS	RECRA	E011	E260	
02C	B10LJ5 DUP	RECRA	E011	E260	
03A	B10LD6(F)	RECRA	DISPOS	E011	
04A	B10LD7	RECRA	DISPOS	E011	E260
05A	B10LC6(F)	RECRA	DISPOS	E011	
06A	B10LC7	RECRA	DISPOS	E011	E260
07A	B10LV6(F)	RECRA	DISPOS	E011	
08A	B10LV7	RECRA	DISPOS	E011	E260
09A	B10LV4(F)	RECRA	DISPOS	E011	
10A	B10LV5	RECRA	DISPOS	E011	E260

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
[illegible]	12-7-00	Fed Ex	12-7-00		