H1292

0055544

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1292 was composed of two water samples designated under SAF No. C01-024 with a Project Designation of: ERDF GW Monitoring, March 2001.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. All analyses except Total Uranium for SDG H1292 (7660) were batched with SDG H1285 (7655).

RECEIVED
OCT 23 2001
EDMC

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

The C-14 MS was batched with SDG H1285 (7655). The MS percent recovery was 102%. No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Iodine-129 Analyses

The LCS had a percent recovery (112%) slightly above the 3σ limits (89-111%), but within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.5 Radium-226 Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

Due to a sample duplicate failure samples B11DD4 and B11DD6 were reanalyzed for total uranium with new quality control samples. No problems were encountered during the course of the reanalyses.

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

5/4/01

Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

SAMPLE SUMMARY

SDG 7660
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1292

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B11DD4	Hanford Site	WATER		R103118-01	C01-024	C01-024-3	03/20/01 12:01
B11DD6	Hanford Site	WATER		R103118-02	C01-024	C01-024-4	03/20/01 07:30
Method Blank		WATER		R103095-05	C01-024		
Method Blank		WATER		R103118-05	C01-024		
Lab Control Sample		WATER		R103095-04	C01-024		
Lab Control Sample		WATER		R103118-04	C01-024		
Duplicate (R103118-02)	Hanford Site	WATER		R103118-03	C01-024		03/20/01 07:30
Duplicate (R103118-02)	Hanford Site	WATER		R103118-06	C01-024		03/20/01 07:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

QC SUMMARY

SDG 7660
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1292

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
7655		Method Blank	WATER						R103095-05	7655-005
		Lab Control Sample	WATER						R103095-04	7655-004
7660	C01-024-3	B11DD4	WATER				03/21/01	1	R103118-01	7660-001
	C01-024-4	B11DD6	WATER				03/21/01	1	R103118-02	7660-002
		Method Blank	WATER						R103118-05	7660-005
		Lab Control Sample	WATER						R103118-04	7660-004
		Duplicate (R103118-02)	WATER				03/21/01	1	R103118-03	7660-003
		Duplicate (R103118-02)	WATER				03/21/01	1	R103118-06	7660-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

SDG 7660
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1292

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	6981-040	10.0	2			1	1	1/1		
Gas Proportional Counting												
82B	WATER	Gross Beta in Water	6981-040	15.0	2			1	1	1/1		
88A	WATER	Gross Alpha in Water	6981-040	20.0	2			1	1	1/1		
Gamma Spectroscopy												
I	WATER	Iodine 129 in Water	6981-040	5.0	2			1	1	1/1		
Kinetic Phosphorimetry												
U_T	WATER	Uranium, Total in Water	6981-057	9.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	WATER	Carbon 14 in Water	6981-040	10.0	2			1	1	1/1		
Radon Counting												
RA	WATER	Radium 226 in Water	6981-040	5.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

WORK SUMMARY

SDG 7660
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1292

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B11DD4			R103118-01	7660-001	82B/82		04/27/01	04/30/01	MCM	Gross Beta in Water
Hanford Site		WATER	03/20/01	7660-001	88A/88		04/27/01	04/30/01	MCM	Gross Alpha in Water
C01-024-3	C01-024		03/21/01	7660-001	C		04/30/01	05/04/01	MCM	Carbon 14 in Water
				7660-001	I		03/30/01	04/30/01	MCM	Iodine 129 in Water
				7660-001	RA		04/24/01	04/30/01	MCM	Radium 226 in Water
				7660-001	TC		04/06/01	04/30/01	MCM	Technetium 99 in Water
				7660-001	U_T	A1	05/04/01	05/04/01	MCM	Uranium, Total in Water
B11DD6			R103118-02	7660-002	82B/82		05/04/01	05/04/01	MCM	Gross Beta in Water
Hanford Site		WATER	03/20/01	7660-002	88A/88		04/27/01	04/30/01	MCM	Gross Alpha in Water
C01-024-4	C01-024		03/21/01	7660-002	C		04/30/01	05/04/01	MCM	Carbon 14 in Water
				7660-002	I		03/30/01	04/30/01	MCM	Iodine 129 in Water
				7660-002	RA		04/24/01	04/30/01	MCM	Radium 226 in Water
				7660-002	TC		04/06/01	04/30/01	MCM	Technetium 99 in Water
				7660-002	U_T	A1	05/04/01	05/04/01	MCM	Uranium, Total in Water
Method Blank			R103095-05	7655-005	82B/82		04/25/01	04/30/01	MCM	Gross Beta in Water
		WATER		7655-005	88A/88		04/16/01	04/30/01	MCM	Gross Alpha in Water
	C01-024			7655-005	C		04/30/01	05/02/01	MCM	Carbon 14 in Water
				7655-005	I		03/28/01	04/30/01	MCM	Iodine 129 in Water
				7655-005	RA		04/24/01	04/30/01	MCM	Radium 226 in Water
				7655-005	TC		04/07/01	04/30/01	MCM	Technetium 99 in Water
Method Blank			R103118-05	7660-005	U_T		05/04/01	05/04/01	MCM	Uranium, Total in Water
		WATER								
	C01-024									
Lab Control Sample			R103095-04	7655-004	82B/82		04/24/01	04/30/01	MCM	Gross Beta in Water
		WATER		7655-004	88A/88		04/16/01	04/30/01	MCM	Gross Alpha in Water
	C01-024			7655-004	C		04/30/01	05/02/01	MCM	Carbon 14 in Water
				7655-004	I		03/28/01	04/30/01	MCM	Iodine 129 in Water
				7655-004	RA		04/23/01	04/30/01	MCM	Radium 226 in Water
				7655-004	TC		04/06/01	04/30/01	MCM	Technetium 99 in Water
Lab Control Sample			R103118-04	7660-004	U_T		05/04/01	05/04/01	MCM	Uranium, Total in Water
		WATER								
	C01-024									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

SDG 7660
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1292

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R103118-02)			R103118-03	7660-003	82B/82		05/04/01	05/04/01	MCM	Gross Beta in Water
Hanford Site		WATER	03/20/01	7660-003	88A/88		05/04/01	04/05/01	MCM	Gross Alpha in Water
	C01-024		03/21/01	7660-003	C		04/30/01	05/04/01	MCM	Carbon 14 in Water
				7660-003	I		03/30/01	04/30/01	MCM	Iodine 129 in Water
				7660-003	RA		04/24/01	04/30/01	MCM	Radium 226 in Water
				7660-003	TC		04/06/01	04/30/01	MCM	Technetium 99 in Water
Duplicate (R103118-02)			R103118-06	7660-006	U_T		05/04/01	05/04/01	MCM	Uranium, Total in Water
Hanford Site		WATER	03/20/01							
	C01-024		03/21/01							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
82B/82	C01-024	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
88A/88	C01-024	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
C	C01-024	Carbon 14 in Water	C14_CHEM_LSC	2			1	1	1	5
I	C01-024	Iodine 129 in Water	I129_SEP_LEPS_GS	2			1	1	1	5
RA	C01-024	Radium 226 in Water	903.1_RA226_LUC	2			1	1	1	5
TC	C01-024	Technetium 99 in Water	TC99_TR_SEP_LSC	2			1	1	1	5
U_T	C01-024	Uranium, Total in Water	UTOT_KPA	2			1	1	1	5
TOTALS				14			7	7	7	35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/04/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1292

R103095-05 Method Blank

METHOD BLANK

SDG	7660	Client/Case no	Hanford	SDG_H1292	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R103095-05	Client sample id	Method Blank		
Dept sample id	7655-005	Material/Matrix		WATER	
		SAF No	C01-024		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.571	0.60	1.4	3.0	U	88A
Gross Beta	12587-47-2	-1.20	1.5	2.6	4.0	U	82B
Carbon 14	14762-75-5	-7.85	27	45	200	U	C
Technetium 99	14133-76-7	2.69	4.0	14	15	U	TC
Radium 226	13982-63-3	-0.073	0.50	0.98	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	N.A.			0.10		U_T
Iodine 129	15046-84-1	-1.03	2.5	5.8	5.0	U	I

ERDF GW Monitoring, March 2001

QC-BLANK 38028

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/04/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1292

R103118-05

Method Blank

METHOD BLANK

SDG	7660	Client/Case no	Hanford	SDG_H1292	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R103118-05	Client sample id	Method Blank		
Dept sample id	7660-005	Material/Matrix		WATER	
		SAF No	C01-024		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Total Uranium (ug/L)	7440-61-1	0	0.030	0.070	0.10	U	U_T

ERDF GW Monitoring, March 2001

QC-BLANK #38443

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

R103095-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7660
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1292
Case no No. 630

Lab sample id R103095-04
Dept sample id 7655-004

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No C01-024

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	66.0	4.8	1.3	3.0		88A	71.7	2.9	92	70-130	70-130
Gross Beta	73.6	3.5	2.2	4.0		82B	80.0	3.2	92	77-123	70-130
Carbon 14	19200	200	64	200		C	21300	850	90	85-115	80-120
Technetium 99	2960	84	16	15		TC	2620	100	113	81-119	80-120
Radium 226	321	7.6	1.3	2.0		RA	325	13	99	90-110	80-120
Total Uranium (ug/L)	N.A.			0.10		U_T					80-120
Iodine 129	584	8.1	9.1	5.0		I	524	21	112	89-111	80-120

ERDF GW Monitoring, March 2001

QC-LCS 38027

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

R103118-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7660
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1292
Case no No. 630

Lab sample id R103118-04
Dept sample id 7660-004

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No C01-024

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
Total Uranium (ug/L)	71.5	11	0.70	0.10		U_T	72.0	2.9	99	73-127	80-120

ERDF GW Monitoring, March 2001

QC-LCS #38442

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

R103118-03 B11DD6

DUPLICATE

SDG	7660			Client/Case no	Hanford SDG H1292
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R103118-03	Lab sample id	R103118-02	Client sample id	B11DD6
Dept sample id	7660-003	Dept sample id	7660-002	Location/Matrix	Hanford Site WATER
		Received	03/21/01	Collected	03/20/01 07:30
				Custody/SAF No	C01-024-4 C01-024

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 PROT TOT LIMIT
Gross Alpha	-0.468	0.58	1.2	3.0	U	88A	-0.244	0.42	1.0	U	-	
Gross Beta	0.700	1.7	2.9	4.0	U	82B	-1.12	1.4	2.5	U	-	
Carbon 14	-0.436	26	43	200	U	C	12.9	28	47	U	-	
Technetium 99	3.15	3.8	7.5	15	U	TC	1.97	6.3	20	U	-	
Radium 226	-0.090	0.60	1.1	2.0	U	RA	-0.200	0.41	0.87	U	-	
Iodine 129	3.03	3.5	8.1	5.0	U	I	-0.264	2.5	5.6	U	-	

ERDF GW Monitoring, March 2001

QC-DUP#2 38060

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

R103118-06 B11DD6

DUPLICATE

SDG	7660			Client/Case no	Hanford SDG H1292
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R103118-06	Lab sample id	R103118-02	Client sample id	B11DD6
Dept sample id	7660-006	Dept sample id	7660-002	Location/Matrix	Hanford Site WATER
		Received	03/21/01	Collected	03/20/01 07:30
				Custody/SAF No	C01-024-4 C01-024

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 PROT TOT LIMIT
Total Uranium (ug/L)	0.040	0.031	0.071	0.10	U	U_T	0.036	0.031	0.071	U	-	

ERDF GW Monitoring, March 2001

QC-DUP#2A1 38444

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/04/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1292

R103118-01 B11DD4

DATA SHEET

SDG	7660	Client/Case no	Hanford	SDG_H1292	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R103118-01	Client sample id	B11DD4		
Dept sample id	7660-001	Location/Matrix	Hanford Site	WATER	
Received	03/21/01	Collected	03/20/01 12:01		
		Custody/SAF No	C01-024-3	C01-024	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.01	2.2	3.9	3.0	U	88A
Gross Beta	12587-47-2	59.4	3.6	2.8	4.0		82B
Carbon 14	14762-75-5	43.4	28	46	200	U	C
Technetium 99	14133-76-7	75.9	9.4	16	15		TC
Radium 226	13982-63-3	0.431	0.46	0.74	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	2.36	0.34	0.071	0.10		U_T
Iodine 129	15046-84-1	13.8	3.7	8.3	5.0		I

ERDF GW Monitoring, March 2001

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/04/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1292

R103118-02 **B11DD6**

DATA SHEET

SDG	7660	Client/Case no	Hanford	SDG_H1292	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R103118-02	Client sample id	B11DD6		
Dept sample id	7660-002	Location/Matrix	Hanford Site	WATER	
Received	03/21/01	Collected	03/20/01 07:30		
		Custody/SAF No	C01-024-4	C01-024	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.244	0.42	1.0	3.0	U	88A
Gross Beta	12587-47-2	-1.12	1.4	2.5	4.0	U	82B
Carbon 14	14762-75-5	12.9	28	47	200	U	C
Technetium 99	14133-76-7	1.97	6.3	20	15	U	TC
Radium 226	13982-63-3	-0.200	0.41	0.87	2.0	U	RA
Total Uranium (ug/L)	7440-61-1	0.036	0.031	0.071	0.10	U	U_T
Iodine 129	15046-84-1	-0.264	2.5	5.6	5.0	U	I

ERDF GW Monitoring, March 2001

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

Test	TC
Matrix	WATER
SDG	7660
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1292

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6981-040						
B11DD4	R103118-01			7660-001	75.9	
B11DD6	R103118-02			7660-002	U	
BLK (QC ID=38028)	R103095-05			7655-005	U	
LCS (QC ID=38027)	R103095-04			7655-004	ok	
Duplicate (R103118-02)	R103118-03			7660-003	-	U
Nominal values and limits from method				RDLs (pCi/L)	15	
ERDF GW Monitoring, March 2001						

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 6981-040	2σ prep error 10.0 %				Reference Lab Notebook 6981 pg. 040											
B11DD4	R103118-01			16	0.0500			66		50			17	04/03/01	04/06	GRB-223
B11DD6	R103118-02			20	0.0500			51		50			17	04/03/01	04/06	GRB-224
BLK (QC ID=38028)	R103095-05			14	0.0500			73		50				04/03/01	04/07	GRB-224
LCS (QC ID=38027)	R103095-04			16	0.0500			62		50				04/03/01	04/06	GRB-205
Duplicate (R103118-02) (QC ID=38060)	R103118-03			7.5	0.0500			69		200			17	04/03/01	04/06	GRB-204
Nominal values and limits from method				15	0.0500			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	15	±	9.2
YIELD	64	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/04/01

Test 82B Matrix WATER
SDG 7660
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1292

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 6981-040								
B11DD4	R103118-01	82		7660-001	59.4			
B11DD6	R103118-02	82		7660-002	U			
BLK (QC ID=38028)	R103095-05	82		7655-005	U			
LCS (QC ID=38027)	R103095-04	82		7655-004	ok			
Duplicate (R103118-02)	R103118-03	82		7660-003	-	U		
Nominal values and limits from method			RDLs (pCi/L)		4.0			
ERDF GW Monitoring, March 2001						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 6981-040	2σ prep error 15.0 % Reference Lab Notebook 6981 pg. 040															
B11DD4	R103118-01	82		2.8	0.300			168		100			38	03/29/01	04/27	GRB-105
B11DD6	R103118-02	82		2.5	0.300			0		100			45	03/29/01	05/04	GRB-105
BLK (QC ID=38028)	R103095-05	82		2.6	0.300			21		100				03/29/01	04/25	GRB-105
LCS (QC ID=38027)	R103095-04	82		2.2	0.300			22		100				03/29/01	04/24	GRB-107
Duplicate (R103118-02) (QC ID=38060)	R103118-03	82		2.9	0.300			0		100			45	03/29/01	05/04	GRB-106
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 FOR 5 SAMPLES
MDA 2.6 ± 0.55
RESIDUE 42 ± 142

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/04/01

Test 88A Matrix WATER
SDG 7660
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1292

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6981-040						
B11DD4	R103118-01	88		7660-001	U	
B11DD6	R103118-02	88		7660-002	U	
BLK (QC ID=38028)	R103095-05	88		7655-005	U	
LCS (QC ID=38027)	R103095-04	88		7655-004	ok	
Duplicate (R103118-02)	R103118-03	88		7660-003	-	U

Nominal values and limits from method RDLs (pCi/L) 3.0
ERDF GW Monitoring, March 2001

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 6981-040	2σ prep error 20.0 % Reference Lab Notebook 6981 pg. 040															
B11DD4	R103118-01	88		3.9	0.300			168		100			38	03/30/01	04/27	GRB-115
B11DD6	R103118-02	88		1.0	0.300			0		100			38	03/30/01	04/27	GRB-116
BLK (QC ID=38028)	R103095-05	88		1.4	0.300			21		100				03/30/01	04/16	GRB-114
LCS (QC ID=38027)	R103095-04	88		1.3	0.300			23		100				03/30/01	04/16	GRB-113
Duplicate (R103118-02) (QC ID=38060)	R103118-03	88		1.2	0.300			0		100			45	03/30/01	05/04	GRB-105
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 FOR 5 SAMPLES
MDA 1.8 ± 2.4
RESIDUE 42 ± 142

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/04/01

Test I Matrix WATER
SDG 7660
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

METHOD SUMMARY

IODINE 129 IN WATER

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1292

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
Preparation batch 6981-040						
B11DD4	R103118-01			7660-001	13.8	
B11DD6	R103118-02			7660-002	U	
BLK (QC ID=38028)	R103095-05			7655-005	U	
LCS (QC ID=38027)	R103095-04			7655-004	HIGH	
Duplicate (R103118-02)	R103118-03			7660-003	-	U
Nominal values and limits from method				RDLs (pCi/L)	5.0	
ERDF GW Monitoring, March 2001						

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 6981-040	2σ prep error 5.0 %				Reference Lab Notebook 6981 pg. 040											
B11DD4	R103118-01			8.3	0.250			92		375			10	03/27/01	03/30	XSPEC-002
B11DD6	R103118-02			5.6	0.250			91		375			10	03/27/01	03/30	XSPEC-014
BLK (QC ID=38028)	R103095-05			5.8	0.250			94		364				03/27/01	03/28	XSPEC-014
LCS (QC ID=38027)	R103095-04			9.1	0.250			95		374				03/27/01	03/28	XSPEC-002
Duplicate (R103118-02) (QC ID=38060)	R103118-03			8.1	0.250			91		363			10	03/27/01	03/30	XSPEC-002
Nominal values and limits from method				5.0	0.250			20-105		300	100		180			

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	CP-024	Iodine-129, Sample Dissolution, rev 1
	CP-560	Iodine-129 Purification, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	7.4	±	3.2
	YIELD	93	±	4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/04/01

Test U T Matrix WATER
SDG 7660
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1292

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/L)
Preparation batch 6981-057					
B11DD4	R103118-01		A1	7660-001	2.36
B11DD6	R103118-02		A1	7660-002	U
BLK (QC ID=38443)	R103118-05			7660-005	U
LCS (QC ID=38442)	R103118-04			7660-004	ok
Duplicate (R103118-02)	R103118-06			7660-006	- U
Nominal values and limits from method ERDF GW Monitoring, March 2001				RDLs (ug/L)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6981-057	2σ prep error 9.0 %			Reference Lab Notebook 6981 pg. 057												
B11DD4	R103118-01		A1	0.071	0.0200								45	05/03/01	05/04	KPA-001
B11DD6	R103118-02		A1	0.071	0.0200								45	05/03/01	05/04	KPA-001
BLK (QC ID=38443)	R103118-05			0.070	0.0200									05/03/00	05/04	KPA-001
LCS (QC ID=38442)	R103118-04			0.70	0.0200									05/03/00	05/04	KPA-001
Duplicate (R103118-02) (QC ID=38444)	R103118-06			0.071	0.0200								45	05/03/01	05/04	KPA-001
Nominal values and limits from method				0.10	0.0200								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-040	Environmental Water Dissolution, rev 3
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 2
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.20 ± 0.56
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/04/01

Test C Matrix WATER
SDG 7660
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1292

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6981-040						
B11DD4	R103118-01			7660-001	U	
B11DD6	R103118-02			7660-002	U	
BLK (QC ID=38028)	R103095-05			7655-005	U	
LCS (QC ID=38027)	R103095-04			7655-004	ok	
Duplicate (R103118-02)	R103118-03			7660-003	-	U

Nominal values and limits from method RDLs (pCi/L) 200
ERDF GW Monitoring, March 2001

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 6981-040	2σ prep error 10.0 %			Reference Lab Notebook 6981 pg. 040												
B11DD4	R103118-01			46	0.0300			100		100			41	04/27/01	04/30	LSC-004
B11DD6	R103118-02			47	0.0300			100		100			41	04/27/01	04/30	LSC-004
BLK (QC ID=38028)	R103095-05			45	0.0300			100		100				04/27/01	04/30	LSC-004
LCS (QC ID=38027)	R103095-04			64	0.0300			100		44				04/27/01	04/30	LSC-004
Duplicate (R103118-02) (QC ID=38060)	R103118-03			43	0.0300			100		100			41	04/27/01	04/30	LSC-004
Nominal values and limits from method				200	0.0300					50			180			

PROCEDURES REFERENCE C14_CHEM_LSC
CP-241 Carbon-14 in Aqueous Samples, rev 2

AVERAGES ± 2 SD MDA 49 ± 17
FOR 5 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/04/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1292

Test RA	Matrix WATER
SDG 7660	
Contact Melissa C. Mannion	

METHOD SUMMARY

RADIUM 226 IN WATER

RADON COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1292	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Radium 226	
Preparation batch 6981-040						
B11DD4	R103118-01			7660-001	U	
B11DD6	R103118-02			7660-002	U	
BLK (QC ID=38028)	R103095-05			7655-005	U	
LCS (QC ID=38027)	R103095-04			7655-004	ok	
Duplicate (R103118-02)	R103118-03			7660-003	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.0	
ERDF GW Monitoring, March 2001						

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 6981-040	2σ prep error 5.0 %				Reference Lab Notebook 6981 pg. 040											
B11DD4	R103118-01			0.74	0.0400			100		109			35	04/23/01	04/24	RN-014
B11DD6	R103118-02			0.87	0.0400			100		109			35	04/23/01	04/24	RN-015
BLK (QC ID=38028)	R103095-05			0.98	0.0400			100		109				04/23/01	04/24	RN-009
LCS (QC ID=38027)	R103095-04			1.3	0.0400			100		112				04/23/01	04/23	RN-010
Duplicate (R103118-02) (QC ID=38060)	R103118-03			1.1	0.0400			100		109			35	04/23/01	04/24	RN-016
Nominal values and limits from method				2.0	0.0400			20-105		100			180			

PROCEDURES	REFERENCE	903.1_RA226_LUC
	CP-701	Radium-226 in Water and Dissolved Samples, rev 2

AVERAGES ± 2 SD	MDA	1.0	± 0.43
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/04/01

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-024-3

Collector K.J. YOUNG	Contact/Requester JH KESSNER H1292 (7660)	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-024	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFSNW-SAWS-H43	Ice Chest No. SMLS54 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 66 lbs 4235-7954-3153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD3 (F)		W	3-20-01	1209	1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD4		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD4		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD4		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B11DD4		W			1x20-mL P	Activity Scan	None
B11DD4		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD4		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD4		W			1x1000-mL G/P	Carbon-14	None
B11DD4		W			4x1000-mL G/P	Iodine-129	None
B11DD4		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG [signature]	3-20-01	Fed Ex	3-20-01
FEDX EXPRESS	3-21-01 10 AM	E. SEGURO [signature]	3-21-01 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

H1292 (7660)

C.O.C. # C01-024-3

SAF No. C01-024

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD4 ✓		W	3-2001	1201	1x1000-mL G/P	Technetium-99 ✓	HCl to pH <2
B11DD4 ✓		W	↓	↓	1x100-mL G/P	Total Uranium ✓	HNO3 to pH <2
B11DD4 ✓		W	↓	↓	1x500-mL G/P	TDS - 160.1 ✓	Cool 4C
B11DD4 ✓		W	↓	↓	1x~~500~~-mL aGs* 1000 RTT 3-2001	TOX - 9020 ✓	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG	[signature]	3-20-01		Fed Ex		3-20-01
Relinquished By			Date/Time	Received By			Date/Time
FED-EXPRESS			3-21-01 10:AM		E. SEGURO	[signature]	3-21-01 10:AM
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

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. # C01-024-4

Collector: KJ. YOUNG	Contact/Requester: JH KESSNER H1292 (7660)	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFSNW-SAWS-1143	Ice Chest No.: GW5107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7560 - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD5 (F)		W	3/20/01	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD6		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD6		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD6		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD6		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD6		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
B11DD6		W			1x20-mL P	Activity Scan	None
B11DD6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD6		W			1x1000-mL G/P	Carbon-14	None
B11DD6		W			4x1000-mL G/P	Iodine-129	None
B11DD6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
KJ. YOUNG	MAR 20 2001	FED EX	3-20-01
FED. EXPRESS	3-21-01 10 AM	E. SEGURO	3-21-01 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. # C01-024-4

SAF No. C01-024

Contact/Requestor JH KESSNER H1292 (7660)

Telephone No. (509) 375-4688 MSIN FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD6		W	3/20/01	0730	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD6		W			1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD6		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD6		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	KJ. YOUNG		MAR 20 2001	FED EX			3-20-01
FED. EXPRESS			3-21-01 10 AM	E. SEGURO			3-21-01 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: (Waste Management) BECHTEL HANFORD (PNNL) Date: 3-21-01 10:AM

Ice chest # or description	SML-554					
Thermometer: time in	1:00					
Thermometer: time out	1:45					
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: Elvie Pagura

Comments:

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: (Waste Mngmt) Bechtel Hanford (PNNL) Date: 3-21-01 10:AM

Ice chest # or description	GWS-107					
Thermometer: time in	1:50					
Thermometer: time out	1:50					
Thermometer reading	4°C					
Thermometer number	6536					
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: Elvia Segura

Comments:

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: (Waste Mngmt) Bechtel Hanford (PNNL) Date/Time received 3-21-01 10: Am

CoC No. C01-024-3, 4, 11, AND 15, SML 554 & GWS-107.

Container I.D. No. _____ Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 6
7. Number of containers per sample: 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. Sagun Date: 3-21-01 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 _____

LIONVILLE LABORATORY INC.

MAY 2001 RECEIVED

Analytical Report

Client: TNU-HANFORD C01-024 H1292
LVL#: 0103L363

W.O.#: 11343-606-001-9999-00
Date Received: 03-23-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 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 that were received past hold and Total Dissolved Solids sample B11DD6 that was re-analyzed past hold due to disparity between sample replicates.

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

5. The method blanks (MB) were within the method criteria with the exception of 01LAKA20-MB1 for Alkalinity that was above the reporting limit.

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

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

8. The replicate analyses were within the 20% 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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

05-07-01
Date

njp\i03-363

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 20 pages.

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

Lionville Laboratory Incorporated

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 Chromatography:			
✓ 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 Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMQ4.0 (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	___ 351.3		
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	___ 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:**

002

Lionville Laboratory Incorporated

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.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/23/01

CLIENT: TNUHANFORD C01-024 H1292

LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B11DD4	Alkalinity	145		MG/L	2.0	1.0
		Bromide by IC	1.2	u	MG/L	1.2	5.0
		Chloride by IC	25.7		MG/L	1.2	5.0
		Fluoride by IC	2.5	u	MG/L	2.5	5.0
		Nitrite by IC	1.25	u	MG/L	1.25	5.0
		Nitrate by IC	89.1		MG/L	2.50	10.0
		Phosphate by IC	1.2	u	MG/L	1.2	5.0
		Sulfate by IC	36.0		MG/L	1.2	5.0
		Nitrate Nitrite	19.9		MG/L	1.0	50.0
		Total Dissolved Solids	407		MG/L	5.00	1.0
		Total Organic Halides	20.0	u	UG/L	20.0	1.0
-004	B11DD6	Alkalinity	0.50	u	MG/L	0.50	1.0
		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
		Nitrate Nitrite	0.020	u	MG/L	0.020	1.0
		Total Dissolved Solids	6.00		MG/L	5.00	1.0
		Total Organic Halides	12.0	u	UG/L	12.0	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/23/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LAKA20-MB1	Alkalinity	1.0	MG/L	0.50	1.0
BLANK10	01LIC026-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
BLANK10	01LN3B20-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	01LSS050-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0
BLANK1	01LX011-MB1	Total Organic Halides	12.0 u	UG/L	12.0	1.0
BLANK10	01LSS063-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 04/23/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B11DD4	Bromide by IC	23.4	0.00	25.0	93.8	5.0
		Chloride by IC	75.2	25.7	50.0	99.1	10.0
		Fluoride by IC	51.9	0.00	50.0	103.9	5.0
		Nitrite by IC	25.2	1.25u	25.0	100.6	5.0
		Nitrate by IC	190	89.1	100	100.9	20.0
		Phosphate by IC	23.6	1.2 u	25.0	94.3	5.0
		Sulfate by IC	86.9	36.0	50.0	101.7	10.0
		Nitrate Nitrite	44.9	19.9	25.0	100	50.0
-004	B11DD6	Total Organic Halides	52.1	2.4	50.0	99.5	1.0
BLANK10	01LAKA20-MB1	Alkalinity	97.0	1.0	100	96.0	1.0
		Alkalinity MSD	97.0	1.0	100	96.0	1.0
BLANK10	01LIC026-MB1	Bromide by IC	4.9	0.25u	5.0	97.9	1.0
		Chloride by IC	4.6	0.25u	5.0	92.8	1.0
		Fluoride by IC	10.8	0.50u	10.0	107.5	1.0
		Nitrite by IC	4.91	0.25u	5.00	98.2	1.0
		Nitrate by IC	5.03	0.25u	5.00	100.5	1.0
		Phosphate by IC	5.0	0.25u	5.0	101.0	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.4	1.0
BLANK10	01LN3B20-MB1	Nitrate Nitrite	0.54	0.02u	0.50	107.8	1.0
BLANK10	01LSS050-MB1	Total Dissolved Solids	102	5.00u	100	102.0	1.0
		Total Dissolved Solids	108	5.00u	100	108.0	1.0
LCSS	01LX011-LCS	Total Organic Halides	52.5	12.0 u	50.0	105.0	1.0
BLANK10	01LSS063-MB1	Total Dissolved Solids	94.0	5.00u	100	94.0	1.0
		Total Dissolved Solids	109	5.00u	100	109.0	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/23/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAKA20-MB1	Alkalinity	96.0	96.0	0.00
BLANK10	01LSS050-MB1	Total Dissolved Solids	102.0	108.0	5.7
BLANK10	01LSS063-MB1	Total Dissolved Solids	94.0	109.0	14.8

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 04/23/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B11DD4	Alkalinity	145	145	0.00	1.0
		Bromide by IC	1.2 u	1.2 u	NC	5.0
		Chloride by IC	25.7	25.9	0.68	5.0
		Fluoride by IC	2.5 u	2.5 u	NC	5.0
		Nitrite by IC	1.25u	1.25u	NC	5.0
		Nitrate by IC	89.1	90.3	1.4	10.0
		Phosphate by IC	1.2 u	1.2 u	NC	5.0
		Sulfate by IC	36.0	35.7	0.84	5.0
		Nitrate Nitrite	19.9	21.0	5.1	50.0
-004REP	B11DD6	Total Dissolved Solids	5.00u	9.00	NC	1.0
		Total Organic Halides	12.0 u	12.0 u	NC	1.0

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11DD4						
ALKALINITY	002	W	01LAKA20	03/20/01	03/28/01	03/28/01
ALKALINITY	002 REP	W	01LAKA20	03/20/01	03/28/01	03/28/01
BROMIDE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
BROMIDE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
BROMIDE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
CHLORIDE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
CHLORIDE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
CHLORIDE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
FLUORIDE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
FLUORIDE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
FLUORIDE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRITE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRITE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRITE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
PHOSPHATE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
PHOSPHATE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
PHOSPHATE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
SULFATE BY IC	002	W	01LIC026	03/20/01	04/17/01	04/17/01
SULFATE BY IC	002 REP	W	01LIC026	03/20/01	04/17/01	04/17/01
SULFATE BY IC	002 MS	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE NITRITE	002	W	01LN3B20	03/20/01	04/06/01	04/06/01
NITRATE NITRITE	002 REP	W	01LN3B20	03/20/01	04/06/01	04/06/01
NITRATE NITRITE	002 MS	W	01LN3B20	03/20/01	04/06/01	04/06/01
TOTAL DISSOLVED SOLI	002	W	01LSS050	03/20/01	03/26/01	03/27/01
TOTAL ORGANIC HALIDE	002	W	01LX011	03/20/01	04/02/01	04/03/01
B11DD6						
ALKALINITY	004	W	01LAKA20	03/20/01	03/28/01	03/28/01
BROMIDE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
CHLORIDE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
FLUORIDE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
PHOSPHATE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
SULFATE BY IC	004	W	01LIC026	03/20/01	04/17/01	04/17/01
NITRATE NITRITE	004	W	01LN3B20	03/20/01	04/06/01	04/06/01
TOTAL DISSOLVED SOLI	004	W	01LSS063	03/20/01	04/18/01	04/19/01
TOTAL DISSOLVED SOLI	004 REP	W	01LSS063	03/20/01	04/18/01	04/19/01
TOTAL ORGANIC HALIDE	004	W	01LX011	03/20/01	04/02/01	04/03/01
TOTAL ORGANIC HALIDE	004 REP	W	01LX011	03/20/01	04/02/01	04/05/01
TOTAL ORGANIC HALIDE	004 MS	W	01LX011	03/20/01	04/02/01	04/05/01

LAB QC:

ALKALINITY	MB1	W	01LAKA20	N/A	03/28/01	03/28/01
ALKALINITY	MB1 BS	W	01LAKA20	N/A	03/28/01	03/28/01
ALKALINITY	MB1 BSD	W	01LAKA20	N/A	03/28/01	03/28/01
BROMIDE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
BROMIDE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
CHLORIDE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
CHLORIDE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
FLUORIDE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
FLUORIDE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
NITRITE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
NITRITE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
NITRATE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
NITRATE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
PHOSPHATE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
PHOSPHATE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
SULFATE BY IC	MB1	W	01LIC026	N/A	04/17/01	04/17/01
SULFATE BY IC	MB1 BS	W	01LIC026	N/A	04/17/01	04/17/01
NITRATE NITRITE	MB1	W	01LN3B20	N/A	04/06/01	04/06/01
NITRATE NITRITE	MB1 BS	W	01LN3B20	N/A	04/06/01	04/06/01
TOTAL DISSOLVED SOLI	MB1	W	01LSS050	N/A	03/26/01	03/27/01
TOTAL DISSOLVED SOLI	MB1 BS	W	01LSS050	N/A	03/26/01	03/27/01
TOTAL DISSOLVED SOLI	MB1 BSD	W	01LSS050	N/A	03/26/01	03/27/01
TOTAL ORGANIC HALIDE	LCS BS	W	01LX011	N/A	04/02/01	04/02/01
TOTAL ORGANIC HALIDE	MB1	W	01LX011	N/A	04/02/01	04/02/01
TOTAL DISSOLVED SOLI	MB1	W	01LSS063	N/A	04/18/01	04/19/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL DISSOLVED SOLI	MB1 BS	W	01LSS063	N/A	04/18/01	04/19/01
TOTAL DISSOLVED SOLI	MB1 BSD	W	01LSS063	N/A	04/18/01	04/19/01

Lionville Laboratory Use Only: 0103L363

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF# C01-024
Est. Final Proj. Sampling Date:
Project #: 11343-CCC-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: DJ
QC: SPC Del: Std TAT: 30 day
Date Rec'd: 3-23-01 Date Due: 4-22-01

		ABC						D	E		F	G	H	I		
Refrigerator #		1						1	2		2	2	2	2		
#/Type Container	Liquid	3AG						1AG	1PL		1PL	1PL	1PL	1PL		
	Solid															
Volume	Liquid	40						1L	500		500	250	500	500		
	Solid															
Preservatives		HCl						H2SO4	HNO3							
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			TOX	INORG: Metal	CN	Anions	Alkalinity	TDS	NO2 NO3		
Lionville Laboratory Use Only		CLP24						ITOX	Met(1)		IC(1)	IALKL	IFDS	IC302		

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	CLP24	ITOX	Met(1)	IC(1)	IALKL	IFDS	IC302
001	B11DD3			W	3-20-01	1201			X				
002	B11DD4					↓	X	X	X	X	X	X	X
003	B11DD5					0730			X				
004	B11DD6					↓	X	X	X	X	X	X	X
005	B11L92					0730	X						
006	B11L37					↓	X						

Special Instructions: SAF C01-024
Run Matrix QC

DATE/REVISIONS:
Met(1) 1. As, Ba, Cr, Pb, Se, V, Zn, Sn
IC(1) 2. Br, Cl, F, NO2, NO3, PO4, SO4
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FED EX	Carlos Hernandez	3-23-01	9:30

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Lionville Laboratory Use Only

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

Tamper Resistant Seal 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 3 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 8245 1371 1921

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

SDW-H1292

C.O.C. # C01-024-3

Page 1 of 2

Collector K.J. YOUNG	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-024	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFSNW-SAWS-1143	Ice Chest No. SIMLESS4 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 66 lbs 4235-7954-3153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD3 (F)		W	3-20-01	1201	1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD4		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD4		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD4		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD4		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD4		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD4~~		W			1x20-mL P	Activity Scan	None
B11DD4		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD4		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD4		W			1x1000-mL G/P	Carbon-14	None
B11DD4		W			4x1000-mL G/P	Iodine-129	None
B11DD4		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	3-20-01	Fed Ex	3-20-01
FED EXPRESS	3-21-01 10 AM	E. SEGURO RA Segura	3-21-01 10 AM
JR Corso JR Corso	3-22-01 16:30	Fed Ex	3-22-01 16:30
FED EX	3-23-01 9:30	Carter Hernandez	3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-3

Page 2 of 2

SAF No. C01-024

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD4		W	3-20-01	1201	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD4		W	↓	↓	1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD4		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD4		W			1x500-mL aGs* 1000 RTS 3-20-01	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			3-20-01		Fed Ex		3-20-01
Relinquished By			Date/Time	Received By			Date/Time
FED. EXPRESS			3-21-01 10:AM		E. SEGURO		3-21-01 10:PM
Relinquished By			Date/Time	Received By			Date/Time
JR Corso			3-22-01 16:30		Fed Ex		3-22-01 16:30
Relinquished By			Date/Time	Received By			Date/Time
FED EX			3-23-01 9:30		Carlos Hernandez		3-23-01 9:30

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

SDG 111292

C.O.C. # C01-024-4

Collector: KJ. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFSNW-SAWS-1143	Ice Chest No.: C615107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 7560 - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD5 (F)		W	3/20/01	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD6		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD6		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD6		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD6~~		W			1x20-mL P	Activity Scan	None
B11DD6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD6		W			1x1000-mL G/P	Carbon-14	None
B11DD6		W			4x1000-mL G/P	Iodine-129	None
B11DD6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
KJ. YOUNG	MAR 20 2001	FED EX	3-20-01
FED EXPRESS	3-21-01 10AM	E. SEGUIRO	3-21-01 10AM
JR Corso	3-22-01 16:30	Fed Ex	3-22-01 16:30
FED EX	3-23-01 9:30	Carla Hennig	3-23-01 9:30

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

SDG- H1292

C.O.C. # C01-024-4

SAF No.	Contact/Requestor	Telephone No.	MSIN	FAX
C01-024	JH KESSNER	(509) 375-4688		

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD6		W	3/20/01	0730	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD6		W			1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD6		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD6		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		MAR 20 2001	FED EX			3-20-01
FED EXPRESS			3-21-01 10 AM	E. SEGURO		RA Segurc	3-21-01 10 AM
JR Corso		JR Corso	3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Domingo			3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-15

Page 1 of 1

Collector K.J. YOUNG	Contact/Requester	Telephone No. MSIN FAX
SAF No. C01-024	Sampling Origin	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFS NW - SAWS-1143	Ice Chest No. SMF 554 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment	Bill of Lading/Air Bill No. 66 lbs 4235-7954-7153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L92 ✓		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B11L92 ✓		W	↓	↓	1x20-mL P	Activity Scan ✓	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			3-20-01		Fed Ex		3-20-01
FED EXPRESS			3-21-01 10 Am	E. SEGURO EA Segure			3-21-01 10 Am
J.R. Corso			3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

506 H1292

C.O.C. # C01-024-11

Page 1 of 1

Collector: H.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFS NW-SAWS-1143	Ice Chest No.: GWS107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 75 lbs - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L37		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11L37		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
H.T SICKLE					Fed Ex		3-20-01
Relinquished By: FED. EXPRESS			Date/Time 10 Am 3-21-01	Received By: E. SEGURO		E. A Seguro	Date/Time 10 Am 3-21-01
Relinquished By: J R Lorso		J R Lorso	3-22-01 16:30	Received By: Fed Ex			Date/Time 3-22-01 16:30
Relinquished By: FED EX			Date/Time 3-23-01 9:30	Received By: Carlos Hernandez			Date/Time 3-23-01 9:30

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

Thermo NUtech CHAIN OF CUSTODY ORD # R1-03-119

03/21/01 15:32:08 WORK ID: SAF C01-024 SDG H1292

RCVD: 03/21/01 DUE: 05/05/01 KEEP: 05/05/02 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B11DD3(F)	LION	DISPOS E012 E013
02A	B11DD4	LION	DISPOS E012 E013 E122 E153 E211 E260 E265 E287
02B	B11DD4 MS	LION	E012 E013 E122 E153 E211 E260 E265 E287
02C	B11DD4 DUP	LION	E012 E013 E122 E153 E211 E260 E265 E287
03A	B11DD5(F)	LION	DISPOS E012 E013
04A	B11DD6	LION	DISPOS E012 E013 E122 E153 E211 E260 E265 E287
05A	B11L37	LION	DISPOS E122
06A	B11L92	LION	DISPOS E122

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
DPCiarlo	3-22-01	Fed. Ex	3-22-01		

Figure 1. Sample Check-in List

Date/Time Received: 3-23-01 9:30

SDG#: 01030363

Work Order Number: _____ SAF# C01-024

Shipping Container ID: 8245 1391 1921 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? NO2 NO3 PO4 Yes [✓] No [ ]

8. Samples have:
   - [✓] tape
   - [ ] hazard labels
   - [✓] custody seals
   - [ ] appropriate sample labels

9. Samples are:
   - [✓] in good condition
   - [ ] leaking
   - [ ] broken
   - [ ] have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory Carlos Hernandez Date: 3-23-01

Telephoned to: _____ On _____ By _____

020

MAY 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11DD3						
ARSENIC, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
ARSENIC, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
ARSENIC, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	001	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	001 REP	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	001 MS	W	01L0216	03/20/01	04/25/01	04/25/01
B11DD4						
ARSENIC, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	002	W	01L0216	03/20/01	04/25/01	04/25/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11DD5						
ARSENIC, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	003	W	01L0216	03/20/01	04/25/01	04/25/01
B11DD6						
ARSENIC, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
BARIUM, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
CHROMIUM, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
LEAD, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
SELENIUM, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
TIN, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
VANADIUM, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01
ZINC, TOTAL	004	W	01L0216	03/20/01	04/25/01	04/25/01

LAB QC:

ARSENIC LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
ARSENIC, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
BARIUM LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
BARIUM, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
CHROMIUM LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
CHROMIUM, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
LEAD LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
LEAD, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
SELENIUM LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
SELENIUM, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
TIN LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
TIN, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
VANADIUM LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01
ZINC LABORATORY	LC1 BS	W	01L0216	N/A	04/25/01	04/25/01
ZINC, TOTAL	MB1	W	01L0216	N/A	04/25/01	04/25/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD C01-024
LVL#: 0103L363
SDG/SAF#: H1292/C01-024

W.O.#: 11343-606-001-9999-00
Date Received: 03-23-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of of 4 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.

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

7. The preparation/method blanks for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a.) The MB result for Zinc was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and samples B11DD5 and B11DD6 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 the Inorganics Laboratory Control Standards Report.

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

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

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

11. The duplicate analyses for 1 analyte was 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.

14. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra LabNet Philadelphia.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

05-07-01
Date

jjw/m03-363

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0104L363

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: X3005A __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	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__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	X6010B	__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	X6010B	__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	X6010B	__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	X6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	X6010B		__200.7				__99
Zinc	X6010B		__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

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/26/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B11DD3	Arsenic, Total	2.3	u	UG/L	2.3	1.0
		Barium, Total	50.0		UG/L	0.20	1.0
		Chromium, Total	2.4		UG/L	0.90	1.0
		Lead, Total	2.6	u	UG/L	2.6	1.0
		Selenium, Total	3.1		UG/L	2.6	1.0
		Tin, Total	3.5	u	UG/L	3.5	1.0
		Vanadium, Total	16.5		UG/L	0.70	1.0
		Zinc, Total	262		UG/L	0.30	1.0
-002	B11DD4	Arsenic, Total	2.3	u	UG/L	2.3	1.0
		Barium, Total	54.9		UG/L	0.20	1.0
		Chromium, Total	4.5		UG/L	0.90	1.0
		Lead, Total	2.6	u	UG/L	2.6	1.0
		Selenium, Total	3.0		UG/L	2.6	1.0
		Tin, Total	3.5	u	UG/L	3.5	1.0
		Vanadium, Total	23.9		UG/L	0.70	1.0
		Zinc, Total	406		UG/L	0.30	1.0
-003	B11DD5	Arsenic, Total	2.3	u	UG/L	2.3	1.0
		Barium, Total	0.20	u	UG/L	0.20	1.0
		Chromium, Total	0.90	u	UG/L	0.90	1.0
		Lead, Total	2.6	u	UG/L	2.6	1.0
		Selenium, Total	2.6	u	UG/L	2.6	1.0
		Tin, Total	3.5	u	UG/L	3.5	1.0
		Vanadium, Total	0.70	u	UG/L	0.70	1.0
		Zinc, Total	0.92		UG/L	0.30	1.0
-004	B11DD6	Arsenic, Total	2.3	u	UG/L	2.3	1.0
		Barium, Total	0.32		UG/L	0.20	1.0
		Chromium, Total	0.90	u	UG/L	0.90	1.0
		Lead, Total	2.6	u	UG/L	2.6	1.0
		Selenium, Total	2.6	u	UG/L	2.6	1.0
		Tin, Total	3.5	u	UG/L	3.5	1.0
		Vanadium, Total	0.70	u	UG/L	0.70	1.0
		Zinc, Total	0.90		UG/L	0.30	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/26/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0216-MB1	Arsenic, Total	2.3	u	UG/L	2.3	1.0
		Barium, Total	0.25		UG/L	0.20	1.0
		Chromium, Total	0.90	u	UG/L	0.90	1.0
		Lead, Total	2.6	u	UG/L	2.6	1.0
		Selenium, Total	2.6	u	UG/L	2.6	1.0
		Tin, Total	3.5	u	UG/L	3.5	1.0
		Vanadium, Total	0.70	u	UG/L	0.70	1.0
		Zinc, Total	1.3		UG/L	0.30	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 04/26/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B11DD3	Arsenic, Total	1960	2.3 u	2000	98.1	1.0
		Barium, Total	1940	50.0	2000	94.3	1.0
		Chromium, Total	200	2.4	200	99.0	1.0
		Lead, Total	486	2.6 u	500	97.1	1.0
		Selenium, Total	1970	3.1	2000	98.2	1.0
		Tin, Total	1030	3.5 u	1000	103.1	1.0
		Vanadium, Total	521	16.5	500	100.8	1.0
		Zinc, Total	747	262	500	96.9	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 04/26/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B11DD3	Arsenic, Total	2.3 u	2.3 u	NC	1.0
		Barium, Total	50.0	49.6	0.80	1.0
		Chromium, Total	2.4	2.3	4.3	1.0
		Lead, Total	2.6 u	2.6 u	NC	1.0
		Selenium, Total	3.1	2.6 u	~~NC~~ 200	1.0
		Tin, Total	3.5 u	3.5 u	NC MW 5/8/01	1.0
		Vanadium, Total	16.5	15.7	5.0	1.0
		Zinc, Total	262	256	2.4	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/26/01

CLIENT: TNUHANFORD C01-024 H1292 LVL LOT #: 0103L363

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0216-LC1	Arsenic, LCS	9600	10000	UG/L	96.0
		Barium, LCS	4740	5000	UG/L	94.7
		Chromium, LCS	492	500	UG/L	98.3
		Lead, LCS	2450	2500	UG/L	98.0
		Selenium, LCS	9660	10000	UG/L	96.6
		Tin, LCS	5010	5000	UG/L	100.1
		Vanadium, LCS	2510	2500	UG/L	100.4
		Zinc, LCS	989	1000	UG/L	98.9

Lionville Laboratory Use Only

0103L363

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVL LIONVILLE LABORATORY INC

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD SAF# C01-024

Est. Final Proj. Sampling Date

Project # 11343-C0C0-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPC Del Std TAT 30 day

Date Rec'd 3-23-01 Date Due 4-22-01

		ABC						D	E		F	G	H	I		
Refrigerator #		1						1	2		2	2	2	2		
#/Type Container	Liquid	3AG						1AG	1PL		1PL	1PL	1PL	1PL		
	Solid															
Volume	Liquid	40						1L	500		500	250	500	500		
	Solid															
Preservatives		HCl						H_2SO_4	HNO_3							
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TOX	Metal	CN	Anions	Alkalinity	TDS	NO2/NO3		
Lionville Laboratory Use Only		CC24H						TTOX	Met(1)		IC(1)	TALK	TDS	IC3N2		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
S - Soil	001	B11DD3			W	3-20-01	1201								X						
SE - Sediment	002	B11DD4					↓	X						X	X		X	X	X	X	
SO - Solid	003	B11DD5					0730								X						
SL - Sludge	004	B11DD6					↓	X						X	X		X	X	X	X	
W - Water	005	B11L92					0730	X													
O - Oil	006	B11L37					↓	X													
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions: SAF C01-024
Run Matrix QC

DATE/REVISIONS:
Met(1) 1. As, Ba, Cr, Pb, Se, V, Zn, Sn
IC(1) 2. Br, Cl, Fl, NO_2, NO_3, PO_4, SO_4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal 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 3 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 8245 1371 1921

Relinquished by	Received by	Date	Time
FED EX	Carlos Hernandez	3-23-01	9:30

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

SDW H1292

C.O.C. # C01-024-3

Collector K.J. YOUNG	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-024	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFSNW-SAWS-H43	Ice Chest No. SIMI 5354 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 66 lbs 4235-7954-3153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD3 (F)		W	3-20-01	1201	1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD4		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD4		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD4		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD4~~		W			1x20-mL P	Activity Scan	None
B11DD4		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD4		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD4		W			1x1000-mL G/P	Carbon-14	None
B11DD4		W			4x1000-mL G/P	Iodine-129	None
B11DD4		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		3-20-01		Fed Ex		3-20-01
Relinquished By			Date/Time 10 AM	Received By			Date/Time 10 AM
	FED EXPRESS		3-21-01		E. SEGURO		3-21-01
Relinquished By			Date/Time	Received By			Date/Time
	JR Corso		3-22-01 16:30		Fed Ex		3-22-01 16:30
Relinquished By			Date/Time	Received By			Date/Time
	FED EX		3-23-01 9:30		Carter Hernandez		3-23-01 9:30

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqu	
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

SDG H1292

C.O.C. # C01-024-

015

SAF No.	Contact/Requestor	Telephone No.	MSIN	FAX
C01-024	JH KESSNER	(509) 375-4688		

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD4		W	3-20-01	1201	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD4		W	↓	↓	1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD4		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD4		W			1x500-mL aGs* 1000 RM 3-20-01	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		3-20-01		Fed Ex		3-20-01
Relinquished By			Date/Time	Received By			Date/Time
FED. EXPRESS			3-21-01 10:AM		E. SEGURO		3-21-01 10:AM
Relinquished By			Date/Time	Received By			Date/Time
JR Corso			3-22-01 16:30	Fed Ex			3-22-01 16:30
Relinquished By			Date/Time	Received By			Date/Time
FED Ex			3-23-01 9:30	Carla Hernandez			3-23-01 9:30

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

SDG 111292

C.O.C. # C01-0

Page 1 of 1

Collector: KJ. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFSNW-SAWS-1143	Ice Chest No.: C415 107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7560 - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD5 (F)		W	3/20/01	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD6		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD6		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD6		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD6~~		W			1x20-mL P	Activity Scan	None
B11DD6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD6		W			1x1000-mL G/P	Carbon-14	None
B11DD6		W			4x1000-mL G/P	Iodine-129	None
B11DD6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
KJ. YOUNG [signature]	MAR 20 2001	FED EX	3-20-01
FED. EXPRESS	3-21-01 10 AM	E. SEGURO [signature]	3-21-01 10 AM
JR Corso [signature]	3-22-01 16:30	Fed Ex	3-22-01 16:30
FED EX	3-23-01 9:30	Carla Wenning	3-23-01 9:30

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

SDG- H1292

C.O.C. # C01-024

SAF No. C01-024

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD6		W	3/20/01	0730	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD6		W	↓	↓	1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD6		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD6		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
KJ. YOUNG			MAR 20 2001	FED EX			3-20-01
FED EXPRESS			3-21-01 10 AM	E. SEGURO		LA Segure	3-21-01 10 AM
JR Corso		JR Corso	3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

SDG H1292

Page 1

Collector K.J. YOUNG	Contact/Requester	Telephone No. MSIN FAX
SAF No. C01-024	Sampling Origin	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFS NW - SAWS-1443	Ice Chest No. SMT-554 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment	Bill of Lading/Air Bill No. 66 lbs 4235-7954-7153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ✓ No

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L92 ✓		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B11L92 ✓		W	↓	↓	1x20-mL P	Activity Scan ✓	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			3-20-01		Fed Ex		3-20-01
FED EXPRESS			3-21-01 10 Am	E. SEGURO EA Segura			3-21-01 10 Am
JR Porso			3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

SOG H1292

Page 1

Collector: H.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFS NW-SAWS-1143	Ice Chest No.: GWS107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 75 lbs - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L37 ✓		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B11L37 ✓		W	↓	↓	1x20-mL P	Activity Scan ✓	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	H.T SICKLE				FED EX		3-20-01
Relinquished By			Date/Time 10 Am	Received By	E. SEGURO		Date/Time 10 Am
FED. EXPRESS			3-21-01		E. A Segure		3-21-01
Relinquished By			Date/Time	Received By			Date/Time
J R Lorso			3-22-01 16:30	Fed Ex			3-22-01 16:30
Relinquished By			Date/Time	Received By			Date/Time
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

PARTIAL DATA FOR SAF C01-024

FINAL DATA PACKAGE

SDG: H1292

☐ **CHEMICAL DATA**

☒ **RADIOCHEMISTRY DATA**

DISTRIBUTE TO: Bob Raidl 5-7-01

WASTE SITE(S): N/A

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-024 H1292

DATE RECEIVED: 03/23/01 LVL LOT # :0103L363

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11DD4	002	W	01LVH103	03/20/01	N/A	03/27/01
B11DD6	004	W	01LVH103	03/20/01	N/A	03/27/01
B11L92	005	W	01LVH103	03/20/01	N/A	03/27/01
B11L37	006	W	01LVH103	03/20/01	N/A	03/27/01
B11L37	006 MS	W	01LVH103	03/20/01	N/A	03/27/01
B11L37	006 MSD	W	01LVH104	03/20/01	N/A	03/28/01

LAB QC:

VBLKSO	MB1	W	01LVH103	N/A	N/A	03/27/01
VBLKSO	MB1 BS	W	01LVH103	N/A	N/A	03/27/01
VBLKSO	MB1 BSD	W	01LVH103	N/A	N/A	03/27/01
VBLKWF	MB1	W	01LVH104	N/A	N/A	03/28/01

MAY 2001
RECEIVED

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD C01-024
RFW #: 0103L363
SDG/SAF #: H1292/C01-024

W.O. #: 11343-606-001-9999-00
Date Received: 03-23-2001

GC/MS VOLATILE

Four (4) water samples were collected on 03-20-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 03-27,28-2001.

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

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

2. Samples were analyzed within required holding time.

3. A non-target compound was detected in sample B11DD6.

4. All surrogate recoveries were within EPA QC limits.

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

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

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

8. Internal standard area and retention time criteria were met.

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."

10. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some Forms may still reference Recra LabNet Philadelphia.

J. Michael Taylor
President
Lionville Laboratory Incorporated

5/9/01
Date

som\group\data\voa\tnu-hanford-0103-363.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 2 1 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 05/04/01 19:10

RFW Batch Number: **0103L363** Client: **TNUHANFORD C01-024 H1292** Work Order: 11343606001 Page: 1a

	Cust ID:	B11DD4		B11DD6		B11L92		B11L37		B11L37		B11L37	
Sample Information	RFW#:	002		004		005		006		006 MS		006 MSD	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	96	%	100	%	89	%	96	%	95	%	94	%
	Bromofluorobenzene	103	%	108	%	96	%	104	%	100	%	96	%
	1,2-Dichloroethane-d4	100	%	106	%	98	%	102	%	99	%	93	%
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		11	B	13	B	15	B	12	B	10	B	3	JB
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	5	U	84	%	68	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		1	J	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		6		5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	5	U	90	%	76	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	5	U	100	%	84	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	5	U	100	%	89	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0103L363** Client: **TNUHANFORD C01-024 H1292** Work Order: 11343606001 Page: 1b

Cust ID:	B11DD4	B11DD6	B11L92	B11L37	B11L37	B11L37
RFW#:	002	004	005	006	006 MS	006 MSD
Chlorobenzene	5 U	5 U	5 U	5 U	100 %	91 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 05/04/01 19:10

RFW Batch Number: **0103L363** Client: **TNUHANFORD C01-024 H1292** Work Order: 11343606001 Page: 2a

	Cust ID:	VBLKSO	VBLKSO BS	VBLKSO BSD	VBLKWF
Sample Information	RFW#:	01LVH103-MB1	01LVH103-MB1	01LVH103-MB1	01LVH104-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	95 %	95 %	92 %	97 %
	Bromofluorobenzene	102 %	104 %	98 %	99 %
	1,2-Dichloroethane-d4	98 %	97 %	96 %	96 %
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		4 J	4 JB	10 B	4 J
Acetone		10 U	10 U	10 U	10 U
Carbon Disulfide		5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	84 %	83 %	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U
Bromodichloromethane		5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Trichloroethene		5 U	90 %	88 %	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U
Benzene		5 U	97 %	97 %	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U
Toluene		5 U	96 %	97 %	5 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0103L363** Client: **TNUHANFORD C01-024 H1292** Work Order: 11343606001 Page: 2b

Cust ID:	**VBLKSO**	**VBLKSO BS**	**VBLKSO BSD**	**VBLKWF**
RFW#:	**01LVH103-MB1**	**01LVH103-MB1**	**01LVH103-MB1**	**01LVH104-MB1**
Chlorobenzene	5 U	96 %	98 %	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B11DD4

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 0103L363-002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032714

Level: (low/med) LOW Date Received: 03/23/01

% Moisture: not dec. _____ Date Analyzed: 03/27/01

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B11DD6

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 0103L363-004

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032715

Level: (low/med) LOW Date Received: 03/23/01

% Moisture: not dec. _____ Date Analyzed: 03/27/01

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.293	10	J

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B11L92

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 0103L363-005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032716

Level: (low/med) LOW Date Received: 03/23/01

% Moisture: not dec. _____ Date Analyzed: 03/27/01

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B11L37

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 0103L363-006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032717

Level: (low/med) LOW Date Received: 03/23/01

% Moisture: not dec. _____ Date Analyzed: 03/27/01

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSO

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 01LVH103-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032704

Level: (low/med) LOW Date Received: 03/27/01

% Moisture: not dec. _____ Date Analyzed: 03/27/01

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKWF

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) WATER Lab Sample ID: 01LVH104-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: h032807

Level: (low/med) LOW Date Received: 03/28/01

% Moisture: not dec. _____ Date Analyzed: 03/28/01

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.280	5	J
2.	UNKNOWN	25.548	3	J

Lionville Laboratory Use Only

0103L363

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC

Client TNU HANFORD SAF# C01-024

Est. Final Proj. Sampling Date

Project # 11343-C006-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPCC Del Std TAT 30 day

Date Rec'd 3-23-01 Date Due 4-22-01

		ABC						D	E		F	G	H	I		
Refrigerator #		1						1	2		2	2	2	2		
#/Type Container	Liquid	3AG						1AG	1PL		1PL	1PL	1PL	1PL		
	Solid															
Volume	Liquid	40						1L	500		500	250	500	500		
	Solid															
Preservatives		HCl						H_2SO_4	HNO_3							
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TOX	Metal	CN	Anions	Alkalinity	TDS	NO_2 NO_3		
Lionville Laboratory Use Only		CO_2H						TTOX	Met(1)		IC(1)	TALKL	TTDS	IC3N2		

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb			TOX	Metal	CN	Anions	Alkalinity	TDS	NO_2 NO_3		
001	B11DD3			W	3/20/01	1201								X							
002	B11DD4					↓	X						X	X		X	X	X	X		
003	B11DD5					0730								X							
004	B11DD6					↓	X						X	X		X	X	X	X		
005	B11L92					0730	X														
006	B11L37					↓	X														

Special Instructions: SAF C01-024
Run Matrix QC

DATE/REVISIONS:
Met(1) 1. As, Ba, Cr, Pb, Se, V, Zn, Sn
IC(1) 2. Br, Cl, Fl, NO_2, NO_3, PO_4, SO_4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal 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. 3 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
8245 1391 1921

Relinquished by	Received by	Date	Time
FED EX	Carlos Hernandez	3-23-01	9:30

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

SDW H1292

C.O.C. # C01-024-3

Collector K.J. YOUNG	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-024	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DF5NW-5AW5-1143	Ice Chest No. 5IMLS54 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 66 lbs 4235-7954-3153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD3 (F)		W	3-20-01	1201	1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD4		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) {Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc}; ICP Metals - 6010A (Add-on) {Tin}	HNO3 to pH <2
B11DD4		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD4		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD4		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD4~~		W			1x20-mL P	Activity Scan	None
B11DD4		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD4		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD4		W			1x1000-mL G/P	Carbon-14	None
B11DD4		W			4x1000-mL G/P	Iodine-129	None
B11DD4		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	3-20-01	Fed Ex	3-20-01
FED EXPRESS	3-21-01 10 AM	E. SEGURO RA Segure	3-21-01 10 AM
JR Corso JR Corso	3-22-01 16:30	Fed Ex	3-22-01 16:31
FED EX	3-23-01 9:30	Carlos Hernandez	3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-3

SAF No. C01-024

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD4		W	3-20-01	1201	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD4		W	↓	↓	1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD4		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD4		W			1x500-mL aGs* 1000 RM 3-20-01	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		3-20-01		Fed Ex		3-20-01
Relinquished By			Date/Time 10 AM	Received By	E. SEGURO		Date/Time 10:AM
FED. EXPRESS			3-21-01				3-21-01
Relinquished By			Date/Time	Received By			Date/Time
JR Corso			3-22-01 16:30	Fed Ex			3-22-01 16:30
Relinquished By			Date/Time	Received By			Date/Time
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-4

Collector: KJ. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFSNW-SAWS-1443	Ice Chest No.: GWS 107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7560 - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD5 (F)		W	3/20/01	0730	1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11DD6		W			1x500-mL G/P	ICP Metals - 6010A (SW-846) (Arsenic, Barium, Chromium, Lead, Selenium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Tin)	HNO3 to pH <2
B11DD6		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B11DD6		W			1x250-mL G/P	Alkalinity - 310.1	Cool 4C
B11DD6		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
~~B11DD6~~		W			1x20-mL P	Activity Scan	None
B11DD6		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B11DD6		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B11DD6		W			1x1000-mL G/P	Carbon-14	None
B11DD6		W			1x1000-mL G/P	Iodine-129	None
B11DD6		W			2x1000-mL G/P	Radium -226	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
KJ. YOUNG	MAR 20 2001	FED EX	3-20-01
FED. EXPRESS	3-21-01 10 AM	E. SEGURO RA Segure	3-21-01 10 AM
JR Corso	3-22-01 16:30	Fed Ex	3-22-01 16:30
FED EX	3-23-01 9:30	Carla Hernandez	3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-4

SAF No. C01-024

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11DD6		W	3/20/01	0730	1x1000-mL G/P	Technetium-99	HCl to pH <2
B11DD6		W			1x100-mL G/P	Total Uranium	HNO3 to pH <2
B11DD6		W			1x500-mL G/P	TDS - 160.1	Cool 4C
B11DD6		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	KJ. YOUNG	[signature]	MAR 20 2001	FED EX			3-20-01
FED EXPRESS			3-21-01 10 AM	E. SEGURO		[signature]	3-21-01 10 AM
JR Corso		[signature]	3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-15

Page 1 of 1 3

Collector K.J. YOUNG	Contact/Requester	Telephone No. MSIN FAX
SAF No. C01-024	Sampling Origin	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, MARCH 2001	Logbook No. DFS NW - SAWS-1443	Ice Chest No. SMK534 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment	Bill of Lading/Air Bill No. 66 lbs 4235-7954-7153
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L92 ✓		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL) ✓	HCl or H2SO4 to pH <2 Cool 4C
B11L92 ✓		W	↓	↓	1x20-mL P	Activity Scan ✓	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG		[signature]	3-20-01		Fed Ex		3-20-01
FED EXPRESS			3-21-01 10 Am	E. SEGURO		EA Segura	3-21-01
J.R. Corso		J.R. Corso	3-22-01 16:30	Fed Ex			3-22-01 16:30
FED EX			3-23-01 9:30	Carlos Hernandez			3-23-01 9:30

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

SDG H1292

C.O.C. # C01-024-11

Page 1 of 1

Collector: H.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C01-024	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, MARCH 2001	Logbook No.: DFS NW-SAWS-1143	Ice Chest No.: GWS107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 75 lbs - 4235-7954-3164
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

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)
Submit deliverable & invoices to JH Kessner, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B11L37		W	3-20-01	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B11L37		W			1x20-mL P	Activity Scan	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
H.T SICKLE		Fed Ex	3-20-01
FED. EXPRESS	3-21-01 10.Am	E. SEGURO E. A Seguro	3-21-01 10.Am
J.R. Corso J.R. Corso	3-22-01 16:30	Fed Ex	3-22-01 16:30
FED EX	3-23-01 9:30	Carlos Hernandez	3-23-01 9:30

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