H1219

0055063

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1219 was composed of two water samples designated under SAF No. B01-048 with a Project Designation of: 221-U QC Sampling - Water.

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

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analyses

Due to a low yield the method blank was reworked in chemistry. The data from the reworked method blank is reported herein. There was contamination in the method blank from Th-230 (0.584 pCi/L). The activity is probably from degraded Th-229 tracer counts in the Th-230 region of interest (energy region) and not Th-230. The activity was below the RDL (1.0 pCi/L). No other problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

RECEIVED
JUN 11 2001
EDMC

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

3/1/01

Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

SAMPLE SUMMARY

SDG 7615
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1219

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B118V2	221 U	WATER		R101110-01	B01-048	B01-048-01	01/16/01 19:30
B118V3	221 U	WATER		R101110-02	B01-048	B01-048-02	01/16/01 20:15
Method Blank		WATER		R101110-04	B01-048		
Lab Control Sample		WATER		R101110-03	B01-048		
Duplicate (R101110-01)	221 U	WATER		R101110-05	B01-048		01/16/01 19:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

QC SUMMARY

SDG 7615
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1219

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
7615	B01-048-01	B118V2	WATER				01/19/01	3	R101110-01	7615-001
	B01-048-02	B118V3	WATER				01/19/01	3	R101110-02	7615-002
		Method Blank	WATER						R101110-04	7615-004
		Lab Control Sample	WATER						R101110-03	7615-003
		Duplicate (R101110-01)	WATER				01/19/01	3	R101110-05	7615-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

SDG 7615
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1219

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	6963-090	5.0	2			1	1	1/1		
NP	WATER	Neptunium in Water	6963-090	5.0	2			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	6963-090	5.0	2			1	1	1/1		
TH	WATER	Thorium, Isotopic in Water	6963-090	5.0	2			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	6963-090	5.0	2			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	6963-090	10.0	2			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	6963-090	20.0	2			1	1	1/1		
93B	WATER	Gross Beta in Water	6963-090	15.0	2			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	6963-090	15.0	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 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

WORK SUMMARY

SDG 7615
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1219

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B118V2			R101110-01	7615-001	93A/93		02/15/01	03/01/01	MCM	Gross Alpha in Water
221 U		WATER	01/16/01	7615-001	93B/93		02/15/01	03/01/01	MCM	Gross Beta in Water
B01-048-01	B01-048		01/19/01	7615-001	AM		02/03/01	03/01/01	MCM	Americium 241 in Water
				7615-001	GAM		01/31/01	03/01/01	MCM	Gamma Emitters
				7615-001	NP		02/14/01	03/01/01	MCM	Neptunium in Water
				7615-001	PU		02/01/01	03/01/01	MCM	Plutonium, Isotopic in Water
				7615-001	SR		01/31/01	03/01/01	MCM	Total Strontium in Water
				7615-001	TH		02/06/01	03/01/01	MCM	Thorium, Isotopic in Water
				7615-001	U		02/06/01	03/01/01	MCM	Uranium, Isotopic in Water
B118V3			R101110-02	7615-002	93A/93		02/15/01	03/01/01	MCM	Gross Alpha in Water
221 U		WATER	01/16/01	7615-002	93B/93		02/15/01	03/01/01	MCM	Gross Beta in Water
B01-048-02	B01-048		01/19/01	7615-002	AM		02/03/01	03/01/01	MCM	Americium 241 in Water
				7615-002	GAM		01/31/01	03/01/01	MCM	Gamma Emitters
				7615-002	NP		02/15/01	03/01/01	MCM	Neptunium in Water
				7615-002	PU		02/01/01	03/01/01	MCM	Plutonium, Isotopic in Water
				7615-002	SR		01/31/01	03/01/01	MCM	Total Strontium in Water
				7615-002	TH		02/06/01	03/01/01	MCM	Thorium, Isotopic in Water
				7615-002	U		02/06/01	03/01/01	MCM	Uranium, Isotopic in Water
Method Blank			R101110-04	7615-004	93A/93		02/15/01	03/01/01	MCM	Gross Alpha in Water
		WATER		7615-004	93B/93		02/15/01	03/01/01	MCM	Gross Beta in Water
	B01-048			7615-004	AM		02/06/01	03/01/01	MCM	Americium 241 in Water
				7615-004	GAM		01/31/01	03/01/01	MCM	Gamma Emitters
				7615-004	NP		02/15/01	03/01/01	MCM	Neptunium in Water
				7615-004	PU		02/03/01	03/01/01	MCM	Plutonium, Isotopic in Water
				7615-004	SR		01/31/01	03/01/01	MCM	Total Strontium in Water
				7615-004	TH	R1	02/09/01	03/01/01	MCM	Thorium, Isotopic in Water
				7615-004	U		02/06/01	03/01/01	MCM	Uranium, Isotopic in Water
Lab Control Sample			R101110-03	7615-003	93A/93		02/22/01	03/01/01	MCM	Gross Alpha in Water
		WATER		7615-003	93B/93		02/22/01	03/01/01	MCM	Gross Beta in Water
	B01-048			7615-003	AM		02/06/01	03/01/01	MCM	Americium 241 in Water
				7615-003	GAM		01/31/01	03/01/01	MCM	Gamma Emitters
				7615-003	NP		02/15/01	03/01/01	MCM	Neptunium in Water
				7615-003	PU		02/03/01	03/01/01	MCM	Plutonium, Isotopic in Water
				7615-003	SR		01/31/01	03/01/01	MCM	Total Strontium in Water
				7615-003	TH		02/02/01	03/01/01	MCM	Thorium, Isotopic in Water
				7615-003	U		02/06/01	03/01/01	MCM	Uranium, Isotopic in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

SDG 7615
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1219

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R101110-01)			R101110-05	7615-005	93A/93		02/15/01	03/01/01	MCM	Gross Alpha in Water
221 U		WATER	01/16/01	7615-005	93B/93		02/15/01	03/01/01	MCM	Gross Beta in Water
	B01-048		01/19/01	7615-005	AM		02/06/01	03/01/01	MCM	Americium 241 in Water
				7615-005	GAM		02/01/01	03/01/01	MCM	Gamma Emitters
				7615-005	NP		02/15/01	03/01/01	MCM	Neptunium in Water
				7615-005	PU		02/03/01	03/01/01	MCM	Plutonium, Isotopic in Water
				7615-005	SR		01/31/01	03/01/01	MCM	Total Strontium in Water
				7615-005	TH		02/02/01	03/01/01	MCM	Thorium, Isotopic in Water
				7615-005	U		02/06/01	03/01/01	MCM	Uranium, Isotopic in Water

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B01-048	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
93B/93	B01-048	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
AM	B01-048	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	2			1	1	1	5
GAM	B01-048	Gamma Emitters	GAMMA_GS	2			1	1	1	5
NP	B01-048	Neptunium in Water	NP237_LLE_PLATE_AEA	2			1	1	1	5
PU	B01-048	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	2			1	1	1	5
SR	B01-048	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TH	B01-048	Thorium, Isotopic in Water	THISO_IE_PLATE_AEA	2			1	1	1	5
U	B01-048	Uranium, Isotopic in Water	UISO_PLATE_AEA	2			1	1	1	5
TOTALS				18			9	9	9	45

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/01/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1219

R101110-04 Method Blank

METHOD BLANK

SDG	7615	Client/Case no	Hanford SDG H1219
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R101110-04	Client sample id	Method Blank
Dept sample id	7615-004	Material/Matrix	WATER
		SAF No	B01-048

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.190	0.80	1.7	3.0	U	93A
Gross Beta	12587-47-2	-0.306	2.3	4.0	4.0	U	93B
Total Strontium	SR-RAD	0.634	0.77	1.4	2.0	U	SR
Thorium 228	14274-82-9	0.221	0.44	0.70		U	TH
Thorium 230	14269-63-7	0.584	0.59	0.56	1.0	J	TH
Thorium 232	TH-232	0	0.15	0.56	1.0	U	TH
Uranium 233	U-233/234	0.205	0.27	0.52	1.0	U	U
Uranium 235	15117-96-1	0	0.17	0.63	1.0	U	U
Uranium 238	U-238	0	0.14	0.52	1.0	U	U
Neptunium 237	13994-20-2	0.235	0.47	0.71	1.0	U	NP
Plutonium 238	13981-16-3	0.074	0.15	0.56	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.15	0.56	1.0	U	PU
Americium 241	14596-10-2	0.150	0.30	0.57	1.0	U	AM
Potassium 40	13966-00-2	U		190		U	GAM
Cobalt 60	10198-40-0	U		9.6	25	U	GAM
Cesium 137	10045-97-3	U		9.6	15	U	GAM
Radium 226	13982-63-3	U		18		U	GAM
Radium 228	15262-20-1	U		57		U	GAM
Europium 152	14683-23-9	U		25	50	U	GAM
Europium 154	15585-10-1	U		28	50	U	GAM
Europium 155	14391-16-3	U		34	50	U	GAM
Thorium 228	14274-82-9	U		14		U	GAM
Thorium 232	TH-232	U		57		U	GAM
Uranium 235	15117-96-1	U		44		U	GAM
Uranium 238	U-238	U		1200		U	GAM
Americium 241	14596-10-2	U		82		U	GAM

211-U QC Sampling - Water

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

BLANK, cont.

SDG	7615	Client/Case no	Hanford	SDG H1219
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925	
Lab sample id	R101110-04	Client sample id	Method Blank	
Dept sample id	7615-004	Material/Matrix		WATER
		SAF No	B01-048	

QC-BLANK 37407

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

R101110-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7615
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1219
Case no TRC-SBB-207925

Lab sample id R101110-03
Dept sample id 7615-003

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B01-048

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	116	8.3	1.6	3.0		93A	108	4.3	107	65-135	70-130
Gross Beta	127	5.8	2.8	4.0		93B	120	4.8	106	74-126	70-130
Total Strontium	122	4.7	1.4	2.0		SR	115	4.6	106	82-118	80-120
Thorium 230	53.4	3.2	0.46	1.0	B	TH	53.5	2.1	100	87-113	80-120
Uranium 233	48.7	5.5	2.6	1.0		U	48.3	1.9	101	80-120	80-120
Uranium 235	38.2	4.7	0.71	1.0		U	39.2	1.6	97	80-120	80-120
Uranium 238	51.2	5.6	2.5	1.0		U	52.5	2.1	98	81-119	80-120
Neptunium 237	125	10	0.63	1.0		NP	119	4.8	105	84-116	80-120
Plutonium 238	73.8	8.1	0.66	1.0		PU	68.0	2.7	108	79-121	80-120
Plutonium 239/240	74.3	8.1	0.66	1.0		PU	73.0	2.9	102	81-119	80-120
Americium 241	50.6	5.3	0.54	1.0		AM	52.5	2.1	96	82-118	80-120
Cobalt 60	542	23	11	25		GAM	554	22	98	76-124	80-120
Cesium 137	584	20	14	15		GAM	552	22	106	75-125	80-120

211-U QC Sampling - Water

QC-LCS 37406

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

R101110-05 B118V2

DUPLICATE

SDG 7615		Client/Case no Hanford	SDG H1219
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id R101110-05	Lab sample id R101110-01	Client sample id B118V2	
Dept sample id 7615-005	Dept sample id 7615-001	Location/Matrix 221 U	WATER
	Received 01/19/01	Collected 01/16/01 19:30	
		Custody/SAF No B01-048-01	B01-048

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	0.644	1.1	1.9	3.0	U	93A	-0.211	0.51	1.2	U	-	
Gross Beta	-0.062	1.8	3.1	4.0	U	93B	-0.153	1.6	2.7	U	-	
Total Strontium	-0.041	0.25	0.54	2.0	U	SR	0.202	0.29	0.56	U	-	
Thorium 228	-0.007	0.040	0.097		U	TH	0	0.081	0.31	U	-	
Thorium 230	0.256	0.15	0.24	1.0	JB	TH	0.604	0.40	0.31	JB	81	149
Thorium 232	-0.007	0.027	0.052	1.0	U	TH	0.081	0.081	0.31	U	-	
Uranium 233	0	0.059	0.22	1.0	U	U	0.027	0.054	0.20	U	-	
Uranium 235	0	0.071	0.27	1.0	U	U	0.032	0.065	0.25	U	-	
Uranium 238	0.029	0.059	0.22	1.0	U	U	0	0.054	0.20	U	-	
Neptunium 237	0.209	0.21	0.31	1.0	U	NP	0	0.32	1.2	U	-	
Plutonium 238	0	0.068	0.26	1.0	U	PU	-0.021	0.062	0.15	U	-	
Plutonium 239/240	0	0.068	0.26	1.0	U	PU	0.031	0.062	0.13	U	-	
Americium 241	0.072	0.14	0.23	1.0	U	AM	-0.028	0.11	0.27	U	-	
Potassium 40	U		310		U	GAM	U		360	U	-	
Cobalt 60	U		17	25	U	GAM	U		13	U	-	
Cesium 137	U		20	15	U	GAM	U		12	U	-	
Radium 226	U		31		U	GAM	U		26	U	-	
Radium 228	U		76		U	GAM	U		56	U	-	
Europium 152	U		48	50	U	GAM	U		30	U	-	
Europium 154	U		49	50	U	GAM	U		35	U	-	
Europium 155	U		43	50	U	GAM	U		28	U	-	
Thorium 228	U		25		U	GAM	U		18	U	-	
Thorium 232	U		76		U	GAM	U		56	U	-	
Uranium 235	U		63		U	GAM	U		42	U	-	
Uranium 238	U		2100		U	GAM	U		1400	U	-	
Americium 241	U		55		U	GAM	U		13	U	-	

211-U QC Sampling - Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

R101110-05 B118V2

DUPLICATE, cont.

SDG	7615		Client/Case no	Hanford	SDG H1219
Contact	Melissa C. Mannion		Case no	TRC-SBB-207925	
	DUPLICATE	ORIGINAL			
Lab sample id	R101110-05	Lab sample id R101110-01	Client sample id	B118V2	
Dept sample id	7615-005	Dept sample id 7615-001	Location/Matrix	221 U	WATER
		Received 01/19/01	Collected	01/16/01 19:30	
			Custody/SAF No	B01-048-01	B01-048

QC-DUP#1 37408

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/01/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1219

R101110-01 B118V2

DATA SHEET

SDG	7615	Client/Case no	Hanford SDG H1219
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R101110-01	Client sample id	B118V2
Dept sample id	7615-001	Location/Matrix	221 U WATER
Received	01/19/01	Collected	01/16/01 19:30
		Custody/SAF No	B01-048-01 B01-048

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.211	0.51	1.2	3.0	U	93A
Gross Beta	12587-47-2	-0.153	1.6	2.7	4.0	U	93B
Total Strontium	SR-RAD	0.202	0.29	0.56	2.0	U	SR
Thorium 228	14274-82-9	0	0.081	0.31		U	TH
Thorium 230	14269-63-7	0.604	0.40	0.31	1.0	JB	TH
Thorium 232	TH-232	0.081	0.081	0.31	1.0	U	TH
Uranium 233	U-233/234	0.027	0.054	0.20	1.0	U	U
Uranium 235	15117-96-1	0.032	0.065	0.25	1.0	U	U
Uranium 238	U-238	0	0.054	0.20	1.0	U	U
Neptunium 237	13994-20-2	0	0.32	1.2	1.0	U	NP
Plutonium 238	13981-16-3	-0.021	0.062	0.15	1.0	U	PU
Plutonium 239/240	PU-239/240	0.031	0.062	0.13	1.0	U	PU
Americium 241	14596-10-2	-0.028	0.11	0.27	1.0	U	AM
Potassium 40	13966-00-2	U		360		U	GAM
Cobalt 60	10198-40-0	U		13	25	U	GAM
Cesium 137	10045-97-3	U		12	15	U	GAM
Radium 226	13982-63-3	U		26		U	GAM
Radium 228	15262-20-1	U		56		U	GAM
Europium 152	14683-23-9	U		30	50	U	GAM
Europium 154	15585-10-1	U		35	50	U	GAM
Europium 155	14391-16-3	U		28	50	U	GAM
Thorium 228	14274-82-9	U		18		U	GAM
Thorium 232	TH-232	U		56		U	GAM
Uranium 235	15117-96-1	U		42		U	GAM
Uranium 238	U-238	U		1400		U	GAM
Americium 241	14596-10-2	U		13		U	GAM

211-U QC Sampling - Water

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

R101110-02 B118V3

DATA SHEET

SDG	7615	Client/Case no	Hanford SDG H1219
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R101110-02	Client sample id	B118V3
Dept sample id	7615-002	Location/Matrix	221 U WATER
Received	01/19/01	Collected	01/16/01 20:15
		Custody/SAF No	B01-048-02 B01-048

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.713	0.59	1.5	3.0	U	93A
Gross Beta	12587-47-2	5.21	2.3	3.5	4.0		93B
Total Strontium	SR-RAD	-0.288	0.65	1.4	2.0	U	SR
Thorium 228	14274-82-9	0.077	0.15	0.59		U	TH
Thorium 230	14269-63-7	0.536	0.61	0.59	1.0	U	TH
Thorium 232	TH-232	0.077	0.15	0.59	1.0	U	TH
Uranium 233	U-233/234	-0.071	0.14	0.55	1.0	U	U
Uranium 235	15117-96-1	0	0.17	0.66	1.0	U	U
Uranium 238	U-238	0.071	0.14	0.55	1.0	U	U
Neptunium 237	13994-20-2	0.226	0.91	1.7	1.0	U	NP
Plutonium 238	13981-16-3	0	0.18	0.36	1.0	U	PU
Plutonium 239/240	PU-239/240	0.117	0.18	0.28	1.0	U	PU
Americium 241	14596-10-2	0.258	0.34	0.66	1.0	U	AM
Potassium 40	13966-00-2	U		220		U	GAM
Cobalt 60	10198-40-0	U		14	25	U	GAM
Cesium 137	10045-97-3	U		13	15	U	GAM
Radium 226	13982-63-3	U		22		U	GAM
Radium 228	15262-20-1	U		50		U	GAM
Europium 152	14683-23-9	U		33	50	U	GAM
Europium 154	15585-10-1	U		38	50	U	GAM
Europium 155	14391-16-3	U		31	50	U	GAM
Thorium 228	14274-82-9	U		17		U	GAM
Thorium 232	TH-232	U		50		U	GAM
Uranium 235	15117-96-1	U		45		U	GAM
Uranium 238	U-238	U		1500		U	GAM
Americium 241	14596-10-2	U		43		U	GAM

211-U QC Sampling - Water

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test AM	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN WATER

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6963-090						
B118V2	R101110-01			7615-001	U	
B118V3	R101110-02			7615-002	U	
BLK (QC ID=37407)	R101110-04			7615-004	U	
LCS (QC ID=37406)	R101110-03			7615-003	ok	
Duplicate (R101110-01)	R101110-05			7615-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
211-U QC Sampling - Water						

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 6963-090	2σ prep error 5.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01			0.27	0.500			78		102			18	02/02/01	02/03	SS-033
B118V3	R101110-02			0.66	0.200			65		102			18	02/02/01	02/03	SS-034
BLK (QC ID=37407)	R101110-04			0.57	0.200			79		102				02/02/01	02/06	SS-038
LCS (QC ID=37406)	R101110-03			0.54	0.200			80		102				02/02/01	02/06	SS-037
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.23	0.500			92		102			21	02/02/01	02/06	SS-041
Nominal values and limits from method				1.0	0.200			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-940	Plutonium Separation and Purification, rev 2
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.45	±	0.38
YIELD	79	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test NP	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

NEPTUNIUM IN WATER

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6963-090						
B118V2	R101110-01			7615-001	U	
B118V3	R101110-02			7615-002	U	
BLK (QC ID=37407)	R101110-04			7615-004	U	
LCS (QC ID=37406)	R101110-03			7615-003	ok	
Duplicate (R101110-01)	R101110-05			7615-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
211-U QC Sampling - Water						

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 6963-090	2σ prep error 5.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01			1.2	0.200			34		129			29	02/08/01	02/14	SS-045
B118V3	R101110-02			1.7	0.100			53		129			30	02/08/01	02/15	SS-024
BLK (QC ID=37407)	R101110-04			0.71	0.100			47		105				02/08/01	02/15	SS-028
LCS (QC ID=37406)	R101110-03			0.63	0.100			53		105				02/08/01	02/15	SS-027
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.31	0.200			52		105			30	02/08/01	02/15	SS-029
Nominal values and limits from method				1.0	0.100			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 1

AVERAGES ± 2 SD	MDA	0.91	± 1.1
FOR 5 SAMPLES	YIELD	48	± 16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test PU	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6963-090								
B118V2	R101110-01			7615-001	U		U	
B118V3	R101110-02			7615-002	U		U	
BLK (QC ID=37407)	R101110-04			7615-004	U		U	
LCS (QC ID=37406)	R101110-03			7615-003	ok		ok	
Duplicate (R101110-01)	R101110-05			7615-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	
211-U QC Sampling - Water								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 6963-090	2σ prep error 5.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01			0.15	0.500			56		474			16	02/01/01	02/01	SS-023
B118V3	R101110-02			0.36	0.200			56		472			16	02/01/01	02/01	SS-024
BLK (QC ID=37407)	R101110-04			0.56	0.200			78		102				02/01/01	02/03	SS-037
LCS (QC ID=37406)	R101110-03			0.66	0.200			66		102				02/01/01	02/03	SS-036
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.26	0.500			69		102			18	02/01/01	02/03	SS-038
Nominal values and limits from method				1.0	0.200			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-940	Plutonium Separation and Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.40	±	0.42	
YIELD	65	±	19	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test TH	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

THORIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6963-090							
B118V2	R101110-01			7615-001	U	0.604 J	U
B118V3	R101110-02			7615-002	U	U	U
BLK (QC ID=37407)	R101110-04		R1	7615-004	U	0.584 J	U
LCS (QC ID=37406)	R101110-03			7615-003		ok	
Duplicate (R101110-01)	R101110-05			7615-005	- U	ok J	- U
Nominal values and limits from method				RDLs (pCi/L)		1.0	1.0
211-U QC Sampling - Water							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 6963-090	2σ prep error 5.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01			0.31	0.300			85		112			21	02/02/01	02/06	SS-045
B118V3	R101110-02			0.59	0.200			71		104			21	02/02/01	02/06	SS-046
BLK (QC ID=37407)	R101110-04		R1	0.56	0.200			52		151				02/02/01	02/09	SS-034
LCS (QC ID=37406)	R101110-03			0.46	0.200			55		515				02/02/01	02/02	SS-023
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.24	0.300			79		728			17	02/02/01	02/02	SS-027
Nominal values and limits from method				1.0	0.200			20-110		150	100		180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-904	Thorium in Water Sample, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	0.43	± 0.31
FOR 5 SAMPLES	YIELD	68	± 29

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test U	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6963-090														
B118V2	R101110-01			7615-001	U		U		U					
B118V3	R101110-02			7615-002	U		U		U					
BLK (QC ID=37407)	R101110-04			7615-004	U		U		U					
LCS (QC ID=37406)	R101110-03			7615-003	ok		ok		ok					
Duplicate (R101110-01)	R101110-05			7615-005	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0		1.0		100		4	
211-U QC Sampling - Water											Averages			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 6963-090	2σ prep error 5.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01			0.25	0.500			82		102			21	01/31/01	02/06	SS-032
B118V3	R101110-02			0.66	0.200			77		102			21	01/31/01	02/06	SS-033
BLK (QC ID=37407)	R101110-04			0.63	0.200			84		102				01/31/01	02/06	SS-035
LCS (QC ID=37406)	R101110-03			2.6	0.200			73		102				01/31/01	02/06	SS-034
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.27	0.500			78		102			21	01/31/01	02/06	SS-036
Nominal values and limits from method				1.0	0.200			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 3
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.88	±	2.0
YIELD	79	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test SR	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

TOTAL STRONTIUM IN WATER

BETA COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6963-090						
B118V2	R101110-01			7615-001	U	
B118V3	R101110-02			7615-002	U	
BLK (QC ID=37407)	R101110-04			7615-004	U	
LCS (QC ID=37406)	R101110-03			7615-003	ok	
Duplicate (R101110-01)	R101110-05			7615-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.0	
211-U QC Sampling - Water						

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 6963-090	2σ prep error 10.0 % Reference Lab Notebook 6963 pg. 090															
B118V2	R101110-01			0.56	0.500			84		100			15	01/31/01	01/31	GRB-230
B118V3	R101110-02			1.4	0.200			92		100			15	01/31/01	01/31	GRB-231
BLK (QC ID=37407)	R101110-04			1.4	0.200			86		100				01/31/01	01/31	GRB-202
LCS (QC ID=37406)	R101110-03			1.4	0.200			89		100				01/31/01	01/31	GRB-232
Duplicate (R101110-01) (QC ID=37408)	R101110-05			0.54	0.500			88		100			15	01/31/01	01/31	GRB-203
Nominal values and limits from method				2.0	0.200					100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-501	Strontium in Water Samples, rev 1

AVERAGES ± 2 SD	MDA	1.1	±	0.93
FOR 5 SAMPLES	YIELD	88	±	6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test 93A	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6963-090						
B118V2	R101110-01	93		7615-001	U	
B118V3	R101110-02	93		7615-002	U	
BLK (QC ID=37407)	R101110-04	93		7615-004	U	
LCS (QC ID=37406)	R101110-03	93		7615-003	ok	
Duplicate (R101110-01)	R101110-05	93		7615-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	3.0	
211-U QC Sampling - Water						

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 6963-090	2σ prep error 20.0 % Reference Lab Notebook 6963 pg. 090															
B118V2	R101110-01	93		1.2	0.200			17		100			30	01/30/01	02/15	GRB-105
B118V3	R101110-02	93		1.5	0.200			18		100			30	01/30/01	02/15	GRB-106
BLK (QC ID=37407)	R101110-04	93		1.7	0.200			25		100				01/30/01	02/15	GRB-114
LCS (QC ID=37406)	R101110-03	93		1.6	0.200			27		100				01/30/01	02/22	GRB-107
Duplicate (R101110-01) (QC ID=37408)	R101110-05	93		1.9	0.200			15		100			30	01/30/01	02/15	GRB-115
Nominal values and limits from method				3.0	0.200			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD	MDA	1.6	±	0.52
FOR 5 SAMPLES	RESIDUE	20	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test 93B	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 6963-090						
B118V2	R101110-01	93		7615-001	U	
B118V3	R101110-02	93		7615-002	5.21	
BLK (QC ID=37407)	R101110-04	93		7615-004	U	
LCS (QC ID=37406)	R101110-03	93		7615-003	ok	
Duplicate (R101110-01)	R101110-05	93		7615-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	4.0	
211-U QC Sampling - Water						

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 6963-090	2σ prep error 15.0 %				Reference Lab Notebook 6963 pg. 090											
B118V2	R101110-01	93		2.7	0.200			17		100			30	01/30/01	02/15	GRB-105
B118V3	R101110-02	93		3.5	0.200			18		100			30	01/30/01	02/15	GRB-106
BLK (QC ID=37407)	R101110-04	93		4.0	0.200			25		100				01/30/01	02/15	GRB-114
LCS (QC ID=37406)	R101110-03	93		2.8	0.200			27		100				01/30/01	02/22	GRB-107
Duplicate (R101110-01) (QC ID=37408)	R101110-05	93		3.1	0.200			15		100			30	01/30/01	02/15	GRB-115
Nominal values and limits from method				4.0	0.200			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	3.2	±	1.1
	RESIDUE	20	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1219

Test GAM	Matrix WATER
SDG 7615	
Contact Melissa C. Mannion	

METHOD SUMMARY

GAMMA EMITTERS

GAMMA SCAN

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1219	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6963-090								
B118V2	R101110-01			7615-001	U		U	
B118V3	R101110-02			7615-002	U		U	
BLK (QC ID=37407)	R101110-04			7615-004	U		U	
LCS (QC ID=37406)	R101110-03			7615-003	ok		ok	
Duplicate (R101110-01)	R101110-05			7615-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
211-U QC Sampling - Water								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 6963-090	2σ prep error 15.0 %			Reference Lab Notebook 6963 pg. 090												
B118V2	R101110-01			12	0.500					564			15	01/25/01	01/31	MB,07,00
B118V3	R101110-02			13	0.500					565			15	01/25/01	01/31	01,03,00
BLK (QC ID=37407)	R101110-04			9.6	0.500					564				01/25/01	01/31	MB,05,00
LCS (QC ID=37406)	R101110-03			14	0.500					565				01/25/01	01/31	01,04,00
Duplicate (R101110-01) (QC ID=37408)	R101110-05			20	0.500					312			16	01/25/01	02/01	01,03,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD	MDA 14	± 7.7
FOR 5 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/01/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality:	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U H1219 (7615)	SAF No.: B01-048	
Ice Chest No.: SM1-421 (1 of 1)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA EBERline	Offsite Property No.: A010173	Bill of Lading/Air Bill No.: 4235 7954	

POSSIBLE SAMPLE HAZARDS/REMARKS
RT 1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH <2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	2	3	1	
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml

SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions.	Ammonia - 350.3	See item (2) in Special Instructions.	See item (3) in Special Instructions.	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions.	TPH: D 8015-M
Sample No. / Matrix * / Sample Date / Sample Time										
B118V2 / WATER / 01/16/01 / 1930									X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	01/16/01 2145	Stored in Ref 2-A	01/16/01 2145
Removed from Ref 2-A 3728	1-18-01 0900	R. Thorem	1-18-01 0900
R. Thorem	1-18-01 0900	FEDEX	1-18-01
FEDERAL EXPRESS	1-19-01 10:AM	E. Dagaro	1-19-01 10:AM

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

~~(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate).~~
~~(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV).~~
~~(3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(4) Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 – Total Sr and Gross alpha gross beta
B118V2 Full Volume Run Lab Q.C. This Sample

RT 1-18-01

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/18/01. Collector not available to relinquish samples on 1/18/01 for shipment.

RT 1-18-01

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1
Collector: Fahlberg	Company Contact: D Jacques; Telephone No.: 373-5299	Project Coordinator: TRENT, SJ	Price Code: 7M; Data Turnaround: 45 Days; Air Quality:
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U H1219 (7615)	SAF No.: B01-048	
Ice Chest No.: SMI-421 (1 of 1)	Field Logbook No.: EL 1517-1; COA: B200CS6100	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA EBERLINE	Offsite Property No.: A810173	Bill of Lading/Air Bill No.: 42357954	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-19-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG	P	aG
No. of Container(s)	1	1	1	1	1	1	1	1	~~1~~ 2	
Volume	40mL	40mL	120mL	250mL	500mL RT 1-16-01	500mL	1000mL	1000mL	~~500mL~~ 1000 mL RT 1-16-01	1000 mL
SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions.	Ammonia - 350.3	See item (2) in Special Instructions.	See item (3) in Special Instructions.	PCBs - 8082	See item (4) in Special Instructions.	TPH-D 8015M

Sample No.	Matrix *	Sample Date	Sample Time										
(27) B118V3	WATER	01/16/01	2015									X	~~[illegible]~~ Received

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	01/16/01 2145	Ref 2-A	01/16/01 2145
Relinquished By: Remote Location Ref 2-A 3728	Date/Time: 1-18-01 0900	Received By: R. Thoren	Date/Time: 1-18-01 0900
Relinquished By: R. Thoren	Date/Time: 1-18-01 0900	Received By: F. Segura	Date/Time: 1-18-01
Relinquished By: FED. EXPRESS	Date/Time: 01-19-01 10:AM	Received By: E. Segura	Date/Time: 1-19-01 10:AM
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

RT 1-18-01

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 (CV) RT 1-18-01

(3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)

(4) Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr

And Gross Alpha / Gross Beta

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/18/01 Collector not available to relinquish samples on 1/18/01 for shipment.

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method		Date/Time 1-18-01

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 1-19-01 10:AM

CoC No. B01-048-01 AND B01-048-02.

Container I.D. No SML-421 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: 2
7. Number of containers per sample: PLEASE (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. Saguro Date: 1-19-01 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 _____

MAR 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B118V2						
CHLORIDE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
CHLORIDE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
CHLORIDE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
FLUORIDE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
FLUORIDE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
FLUORIDE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRITE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRITE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRITE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRATE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRATE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRATE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
PHOSPHATE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
PHOSPHATE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
PHOSPHATE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
SULFATE BY IC	001	W	01LIC007	01/16/01	01/26/01	01/26/01
SULFATE BY IC	001 REP	W	01LIC007	01/16/01	01/26/01	01/26/01
SULFATE BY IC	001 MS	W	01LIC007	01/16/01	01/26/01	01/26/01
AMMONIA	001	W	01LAM007	01/16/01	02/01/01	02/01/01
AMMONIA	001 REP	W	01LAM007	01/16/01	02/01/01	02/01/01
AMMONIA	001 MS	W	01LAM007	01/16/01	02/01/01	02/01/01
PH	001	W	01LPH006	01/16/01	01/22/01	01/22/01
PH	001 REP	W	01LPH006	01/16/01	01/22/01	01/22/01
B118V3						
CHLORIDE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
FLUORIDE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRITE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
NITRATE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
PHOSPHATE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
SULFATE BY IC	002	W	01LIC007	01/16/01	01/26/01	01/26/01
AMMONIA	002	W	01LAM007	01/16/01	02/01/01	02/01/01
PH	002	W	01LPH006	01/16/01	01/22/01	01/22/01

LAB QC:

CHLORIDE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
FLUORIDE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01
FLUORIDE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
NITRITE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01
NITRITE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
NITRATE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01
NITRATE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
PHOSPHATE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01
PHOSPHATE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
SULFATE BY IC	MB1	W	01LIC007	N/A	01/26/01	01/26/01
SULFATE BY IC	MB1 BS	W	01LIC007	N/A	01/26/01	01/26/01
AMMONIA	MB1	W	01LAM007	N/A	02/01/01	02/01/01
AMMONIA	MB1 BS	W	01LAM007	N/A	02/01/01	02/01/01
AMMONIA	MB1 BSD	W	01LAM007	N/A	02/01/01	02/01/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-048 H1219
LVL#: 0101L800

W.O.#: 10985-001-001-9999-00
Date Received: 01-19-01

INORGANIC NARRATIVE

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

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, Phosphate and pH that were received past hold.

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

5. The method blanks were within the method criteria

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Ammonia that was above the acceptance 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.

J. Michael Taylor
President
Lionville Laboratory Incorporated

02-28-01
Date

njp\i01-800

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 13 pages.

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Lionville Laboratory, Inc.

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	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	✓ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
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:**

64

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L-WI-034/A-01/01

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.

05

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B118V2	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
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	5.1	PH UNIT	0.01	1.0
-002	B118V3	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
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	5.8	PH UNIT	0.01	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LIC007-MB1	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	01LAM007-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B118V2	Chloride by IC	4.9	0.16	5.0	95.3	1.0
		Fluoride by IC	10.5	0.00	10.0	105.4	1.0
		Nitrite by IC	4.87	0.25u	5.00	97.3	1.0
		Nitrate by IC	4.82	0.25u	5.00	96.3	1.0
		Phosphate by IC	4.8	0.25u	5.0	96.4	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.1	1.0
		Ammonia, as N	1.3	0.10u	1.0	130.0	1.0
BLANK10	01LIC007-MB1	Chloride by IC	4.7	0.25u	5.0	94.3	1.0
		Fluoride by IC	10.7	0.50u	10.0	106.6	1.0
		Nitrite by IC	5.00	0.25u	5.00	100	1.0
		Nitrate by IC	4.82	0.25u	5.00	96.3	1.0
		Phosphate by IC	4.9	0.25u	5.0	98.6	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.5	1.0
BLANK10	01LAM007-MB1	Ammonia, as N	1.1	0.10u	1.0	112.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	102.0	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM007-MB1	Ammonia, as N	112.0	102.0	9.3

69

87

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B118V2	Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.25u	0.25u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		pH	5.1	5.2	2.3	1.0

RECRA LabNet Use Only: 0101L800

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hanford B01-048
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 1-19-01 Date Due: 2-18-01
Account #:

		A,B,C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid	3aq	2Aq	2aq					1P		1p	1p	1P	2aq		
	Solid		0	0												
Volume	Liquid	40	950	950					500		125	500	500	950		
	Solid															
Preservatives		HCL	—	—					HNO3		—	—	H2SO4	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	pH	IC Anions	Ammonia	TPH		
		RECRA LabNet Use Only														
		OLC24H	OLC25X	OPCB					MET (1)		HPI	IC (1)	NH3N	OGDO		

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	OLC24H	OLC25X	OPCB					MET (1)		HPI	IC (1)	NH3N	OGDO		
001	B118V2	✓	✓	W	1/16/01	1930	X	X	X					X		X	X	X	X		
002	B118V3			1	1	2015	X (1)	X (1)	X (1)					X		X	X (2aq 2nd)	X	X (1)		

Special Instructions: Saf B01-048
Run matrix QC on #001
IC(1): Cl, Fl, NO3, NO2, PO4, SO4
MET(1): Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Sr, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container per VOA, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 2.0 °C

Relinquished by	Received by	Date	Time
FedEx	D. [illegible]	1/16/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 1735

0101L800

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERC99.052 Lid1	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4238 7454 - 1735	

POSSIBLE SAMPLE HAZARDS/REMARKS
RT 1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH <2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	1	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml

SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPH-D 8015-M
Sample No. / Matrix * / Sample Date / Sample Time										
B118V2 / WATER / 01/16/01 / 1930	X	X	X	X	X	X		X		X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R Fahlberg / R Fahlberg	01/16/01 2145	Received By: Standin	2145
Relinquished By: Removalite / Rof 2-A 3728	1.18.01 0900	Received By: R.J. Thorell	1.18.01 0900
Relinquished By: R.J. Thorell	1.18.01 0900	Received By: FEDEX	
Relinquished By: FedEx	1.19.01 0945	Received By: [illegible]	1.19.01 0945
Relinquished By:		Received By:	
Relinquished By:		Received By:	

RT 1-18-01

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium}; Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~ End
~~Gross Alpha Gross Beta~~
B118V2 Full Volume Run for Q.C. This Sample

RT 1-18-01

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Date/Time
Collector not available to relinquish samples on 1/18/01 for shipment. RT Date/Time 1-18-01

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality:	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERL99-052 (of 1)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4236 7454 - 1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-18-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG		aG
No. of Container(s)	1	1	1	1	1	1	1	1		1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	~~500mL~~ 1000 mL RT 1-18-01	1000 mL

SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH-D 8015M

Sample No.	Matrix *	Sample Date	Sample Time										
B118V3	WATER	01/16/01	2015	/	X	X	X	X	X	X	X		X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	2145 01/16/01	Stanbolin	2145 Ref 2-A 01/16/01
Removed from Ref 2-A 3728	1-18-01 0900	R. Thorney	1-18-01 0900
R. Thorney	1-18-01 0900	FEDEX	
FEDEX	1.19.01 0945	D. [illegible]	1.19.01 0945

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
~~(4) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec -- Add-on (Radium-226, Radium-228); Isotopic Plutonium, Isotopic Thorium, Isotopic Uranium, Americium-241, Neptunium-237, Strontium-89,90 -- Total Sr~~
~~Rad Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Collector not available to relinquish samples on 1/16/01 for shipment.

RT 1-18-01

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

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

BHI-EE-011 (10/99)

MAR 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B118V2						
SILVER, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
SILVER, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
SILVER, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
ALUMINUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
ALUMINUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
ALUMINUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
ARSENIC, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
ARSENIC, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
ARSENIC, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
BARIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
BARIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
BARIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
BERYLLIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
BERYLLIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
BERYLLIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
BISMUTH, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
BISMUTH, TOTAL REP	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
BISMUTH, TOTAL SPIKE	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
CALCIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
CALCIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
CALCIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
CADMIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
CADMIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
CADMIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
COBALT, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
COBALT, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
COBALT, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
CHROMIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
CHROMIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
CHROMIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
COPPER, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
COPPER, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
COPPER, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
IRON, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
IRON, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
MERCURY, TOTAL	001	W	01C0031	01/16/01	01/23/01	01/24/01
MERCURY, TOTAL	001 REP	W	01C0031	01/16/01	01/23/01	01/24/01
MERCURY, TOTAL	001 MS	W	01C0031	01/16/01	01/23/01	01/24/01
POTASSIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
POTASSIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
POTASSIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
MAGNESIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
MAGNESIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
MAGNESIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
MANGANESE, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
MANGANESE, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
MANGANESE, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
SODIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
SODIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
SODIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
NICKEL, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
NICKEL, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
NICKEL, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
PHOSPHORUS, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
PHOSPHORUS, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
PHOSPHORUS, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
LEAD, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
LEAD, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
LEAD, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
ANTIMONY, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
ANTIMONY, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
ANTIMONY, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
SELENIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
SELENIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
SELENIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
STRONTIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
STRONTIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
STRONTIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
THALLIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
THALLIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
THALLIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
VANADIUM, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
VANADIUM, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
ZINC, TOTAL	001	W	01L0035	01/16/01	01/31/01	02/08/01
ZINC, TOTAL	001 REP	W	01L0035	01/16/01	01/31/01	02/08/01
ZINC, TOTAL	001 MS	W	01L0035	01/16/01	01/31/01	02/08/01
B118V3						
SILVER, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
ALUMINUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
ARSENIC, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
BARIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
BERYLLIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
BISMUTH, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
CALCIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
CADMIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
COBALT, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
CHROMIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
COPPER, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
IRON, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
MERCURY, TOTAL	002	W	01C0031	01/16/01	01/23/01	01/24/01
POTASSIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
MAGNESIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
MANGANESE, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
SODIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
NICKEL, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
PHOSPHORUS, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
LEAD, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
ANTIMONY, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
SELENIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
STRONTIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
THALLIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
VANADIUM, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01
ZINC, TOTAL	002	W	01L0035	01/16/01	01/31/01	02/08/01

LAB QC:

SILVER LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
ALUMINUM LABORTORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
ALUMINUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
ARSENIC LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
ARSENIC, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
BARIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
BARIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
BERYLLIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
BISMUTH, LCS	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
BISMUTH, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
CALCIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
CALCIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
CADMIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
CADMIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
COBALT LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
COBALT, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
CHROMIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
CHROMIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
COPPER LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
COPPER, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
IRON LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
IRON, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
MERCURY LABORATORY	LC1 BS	W	01C0031	N/A	01/23/01	01/24/01
MERCURY, TOTAL	MB1	W	01C0031	N/A	01/23/01	01/24/01
POTASSIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
POTASSIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
MAGNESIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
MAGNESIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
MANGANESE LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
MANGANESE, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
SODIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
SODIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
NICKEL LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
NICKEL, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
PHOSPHORUS LCS	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
PHOSPHORUS, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
LEAD LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
ANTIMONY LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
ANTIMONY, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
SELENIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
SELENIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
STRONTIUM LCS STANDA	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
STRONTIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
THALLIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
THALLIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
VANADIUM LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
VANADIUM, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01
ZINC LABORATORY	LC1 BS	W	01L0035	N/A	01/31/01	02/08/01
ZINC, TOTAL	MB1	W	01L0035	N/A	01/31/01	02/08/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-048
LVL#: 0101L800
SDG/SAF#: H1219/B01-048

W.O.#: 10985-001-001-9999-00
Date Received: 01-19-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 water samples.

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

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

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

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

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

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to 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 18 pages.

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

11. The duplicate analyses for 6 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

14. 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

02-28-01
Date

gmb/m01-801

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#: 0101L800

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	✓6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [3]	__245.5 [3]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
							__99

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B118V2	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	29.8		UG/L	22.7	1.0
		Arsenic, Total	2.4	u	UG/L	2.4	1.0
		Barium, Total	0.42		UG/L	0.20	1.0
		Beryllium, Total	0.14		UG/L	0.10	1.0
		Bismuth, Total	3.5	u	UG/L	3.5	1.0
		Calcium, Total	19.2	u	UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	0.71		UG/L	0.60	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	21.8	u	UG/L	21.8	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	40.9	u	UG/L	40.9	1.0
		Magnesium, Total	6.7	u	UG/L	6.7	1.0
		Manganese, Total	0.35		UG/L	0.20	1.0
		Sodium, Total	70.6		UG/L	4.1	1.0
		Nickel, Total	0.90	u	UG/L	0.90	1.0
		Phosphorus, Total	20.0	u	UG/L	20.0	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Strontium, Total	0.17		UG/L	0.10	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	0.80	u	UG/L	0.80	1.0
		Zinc, Total	3.9		UG/L	0.40	1.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B118V3	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	44.0		UG/L	22.7	1.0
		Arsenic, Total	2.4	u	UG/L	2.4	1.0
		Barium, Total	0.45		UG/L	0.20	1.0
		Beryllium, Total	0.22		UG/L	0.10	1.0
		Bismuth, Total	3.5	u	UG/L	3.5	1.0
		Calcium, Total	19.2	u	UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	0.87		UG/L	0.60	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	21.8	u	UG/L	21.8	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	40.9	u	UG/L	40.9	1.0
		Magnesium, Total	8.6		UG/L	6.7	1.0
		Manganese, Total	0.53		UG/L	0.20	1.0
		Sodium, Total	54.8		UG/L	4.1	1.0
		Nickel, Total	0.90	u	UG/L	0.90	1.0
		Phosphorus, Total	20.0	u	UG/L	20.0	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Strontium, Total	0.22		UG/L	0.10	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	0.94		UG/L	0.80	1.0
		Zinc, Total	1.3		UG/L	0.40	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0035-MB1	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	26.8		UG/L	22.7	1.0
		Arsenic, Total	2.4	u	UG/L	2.4	1.0
		Barium, Total	0.20	u	UG/L	0.20	1.0
		Beryllium, Total	0.10		UG/L	0.10	1.0
		Bismuth, Total	3.5	u	UG/L	3.5	1.0
		Calcium, Total	19.2	u	UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	0.60	u	UG/L	0.60	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	21.8	u	UG/L	21.8	1.0
		Potassium, Total	40.9	u	UG/L	40.9	1.0
		Magnesium, Total	6.7	u	UG/L	6.7	1.0
		Manganese, Total	0.20		UG/L	0.20	1.0
		Sodium, Total	39.4		UG/L	4.1	1.0
		Nickel, Total	0.90	u	UG/L	0.90	1.0
		Phosphorus, Total	20.0	u	UG/L	20.0	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Strontium, Total	0.12		UG/L	0.10	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	0.80	u	UG/L	0.80	1.0
		Zinc, Total	0.57		UG/L	0.40	1.0
BLANK1	01C0031-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B118V2	Silver, Total	49.9	1.1 u	50.0	99.8	1.0
		Aluminum, Total	2060	29.8	2000	101.6	1.0
		Arsenic, Total	2020	2.4 u	2000	100.9	1.0
		Barium, Total	1990	0.42	2000	99.7	1.0
		Beryllium, Total	51.3	0.14	50.0	102.3	1.0
		Bismuth, Total	5250	3.5 u	5000	105.1	1.0
		Calcium, Total	26700	19.2 u	25000	106.7	1.0
		Cadmium, Total	50.8	0.30u	50.0	101.6	1.0
		Cobalt, Total	509	0.90u	500	101.8	1.0
		Chromium, Total	204	0.71	200	101.7	1.0
		Copper, Total	244	0.90u	250	97.6	1.0
		Iron, Total	1010	21.8 u	1000	101.2	1.0
		Mercury, Total	0.93	0.10u	1.0	92.9	1.0
		Potassium, Total	26100	40.9 u	25000	104.3	1.0
		Magnesium, Total	26700	6.7 u	25000	106.7	1.0
		Manganese, Total	521	0.35	500	104.2	1.0
		Sodium, Total	25100	70.6	25000	100	1.0
		Nickel, Total	512	0.90u	500	102.5	1.0
		Phosphorus, Total	4790	20.0 u	5000	95.9	1.0
		Lead, Total	507	2.1 u	500	101.4	1.0
		Antimony, Total	524	2.3 u	500	104.9	1.0
		Selenium, Total	2020	3.3 u	2000	100.8	1.0
		Strontium, Total	1040	0.17	1000	103.7	1.0
		Thallium, Total	1980	4.0 u	2000	99.2	1.0
		Vanadium, Total	508	0.80u	500	101.7	1.0
		Zinc, Total	516	3.9	500	102.3	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219

LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B118V2	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	29.8	34.7	15.2	1.0
		Arsenic, Total	2.4 u	2.4 u	NC	1.0
		Barium, Total	0.42	0.39	7.4	1.0
		Beryllium, Total	0.14	0.14	0.00	1.0
		Bismuth, Total	3.5 u	3.5 u	NC	1.0
		Calcium, Total	19.2 u	19.2 u	NC	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.90u	0.90u	NC	1.0
		Chromium, Total	0.71	0.60u	~~NC~~ 200	1.0
		Copper, Total	0.90u	0.90u	NC	1.0
		Iron, Total	21.8 u	34.5	~~NC~~ 200	1.0
		Mercury, Total	0.10u	0.10u	NC	1.0
		Potassium, Total	40.9 u	40.9 u	NC	1.0
		Magnesium, Total	6.7 u	6.7 u	NC	1.0
		Manganese, Total	0.35	0.22	45.6	1.0
		Sodium, Total	70.6	56.5	22.2	1.0
		Nickel, Total	0.90u	0.90u	NC	1.0
		Phosphorus, Total	20.0 u	20.0 u	NC	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Antimony, Total	2.3 u	2.3 u	NC	1.0
		Selenium, Total	3.3 u	3.3 u	NC	1.0
		Strontium, Total	0.17	0.13	26.7	1.0
		Thallium, Total	4.0 u	4.0 u	NC	1.0
		Vanadium, Total	0.80u	0.80u	NC	1.0
		Zinc, Total	3.9	1.8	73.7	1.0

2/28/01

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/28/01

CLIENT: TNUHANFORD B01-048 H1219 LVL LOT #: 0101L800

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0035-LC1	Silver, LCS	511	500	UG/L	102.3
		Aluminum, LCS	5240	5000	UG/L	104.8
		Arsenic, LCS	10200	10000	UG/L	102.3
		Barium, LCS	5040	5000	UG/L	100.8
		Beryllium, LCS	259	250	UG/L	103.6
		Bismuth, LCS	5070	5000	UG/L	101.3
		Calcium, LCS	25700	25000	UG/L	102.8
		Cadmium, LCS	263	250	UG/L	105.2
		Cobalt, LCS	2610	2500	UG/L	104.4
		Chromium, LCS	518	500	UG/L	103.7
		Copper, LCS	1250	1250	UG/L	100.4
		Iron, LCS	5110	5000	UG/L	102.3
		Potassium, LCS	26100	25000	UG/L	104.6
		Magnesium, LCS	26400	25000	UG/L	105.7
		Manganese, LCS	798	750	UG/L	106.4
		Sodium, LCS	25100	25000	UG/L	100.3
		Nickel, LCS	2090	2000	UG/L	104.5
		Phosphorus, LCS	5130	5000	UG/L	102.6
		Lead, LCS	2590	2500	UG/L	103.6
		Antimony, LCS	3100	3000	UG/L	103.5
		Selenium, LCS	10200	10000	UG/L	102.4
		Strontium, LCS	5000	5000	UG/L	100.0
		Thallium, LCS	10300	10000	UG/L	102.8
		Vanadium, LCS	2620	2500	UG/L	104.9
		Zinc, LCS	1050	1000	UG/L	104.7
LCS1	01C0031-LC1	Mercury, LCS	5.3	5.0	UG/L	105.3

RECRA LabNet Use Only: 01011800

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hanford B01-048
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 1-19-01 Date Due: 2-18-01
Account #:

		A,B,C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid	3ag	2Ag	2ag					1P		1p	1p	1P	2ag		
	Solid		0	0												
Volume	Liquid	40	950	950					500		125	500	500	950		
	Solid															
Preservatives		HCL	—	—					HNO3		—	—	H2SO4	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	Pt	IC Anions	Ammonia	TPH		
RECRA LabNet Use Only		OLC24H	OLC25X	OPCB					Met+1		HPI	IC1	IN35N	ODRO		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OLC24H	OLC25X	OPCB					Met+1		HPI	IC1	IN35N	ODRO		
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	001	B118V2	✓	✓	W	1/16/01	1930	X	X	X					X		X	X	X	X	
	002	B118V3			⊥	⊥	2015	X (1)	X (1)	X (1)					X		X	X (2)	X	X (1)		

Special Instructions: SAF B01-048
Run Matrix QC on #001
IC①: Cl, Fl, NO3, NO2, PO4, SO4
Met①: Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Sc, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container per VOA, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N (NO2 NO3)

COC Tape was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N
Cooler Temp 2.0 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	1/16/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 1735

0101L800

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality: [ ]	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERC99-052 Lid 1	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A0102 02	Bill of Lading/Air Bill No.: 4230 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS
RT 1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH <2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	1	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml

SAMPLE ANALYSIS

				pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPHID 8015-M
Sample No.	Matrix *	Sample Date	Sample Time										
B118V2	WATER	01/16/01	1930	X	X	X	X	X	X		X		X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	01/16/01 2145	S Swindin / R of Z-A	01/16/01 2145
Removed from R of Z-A 3728	1.18.01 0900	R J Thoren	1.18.01 0400
R J Thoren	1.18.01 0900	FEDEX	
FedEx	1.19.01 0945	D Smith	1.19.01 0945

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium}; Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~ RT 1/18
B118V2 Full Volume Run Lab Q.C. This Sample

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

Samples stored in Ref.# ZA at the 3728 Shipping Facility on 1/16/01. Date/Time
Collector not available to relinquish samples on 1/18/01 for shipment. RT Date/Time 1-18-01

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | **B01-048-02** | Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality:	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERL 99-052 (of 1)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4236 7954 - 1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

RT 1-19-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	sGs*	sGs*	P	P	P	P	sG	sG	P	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	500mL 1000 mL	1000 mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH 8015
B118V3	WATER	01/16/01	2015		X	X	X	X	X	X	X		X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	2145 01/16/01	Ref 2-A	2145 01/16/01
Ref 2-A 3728	0900 1-18-01	R. Thorsen	0900 1-18-01
R. Thorsen	0900 1.18.01	FEDEX	
FedEx	1.19.01 0945	D. Jones	1.19.01 0945

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
~~(4) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~
~~Rad Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Collector not available to relinquish samples on 1/18/01 for shipment.

RT 1-18-01 Date/Time

Date/Time

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

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

RFW LOT # :0101L800

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B118V2	001	W	01LE0079	01/16/01	01/19/01	01/23/01	01/31/01
B118V2	001 MS	W	01LE0079	01/16/01	01/19/01	01/23/01	01/31/01
B118V2	001 MSD	W	01LE0079	01/16/01	01/19/01	01/23/01	01/31/01
B118V3	002	W	01LE0079	01/16/01	01/19/01	01/23/01	01/31/01
LAB QC:							
BLK	MB1	W	01LE0079	N/A	N/A	01/23/01	01/31/01
BLK	MB1 BS	W	01LE0079	N/A	N/A	01/23/01	01/31/01

MAR 2001
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-048
LVL# : 0101L800
SDG/SAF#: H1219/B01-048

W.O #: 10985-001-001-9999-00
Date Received: 01-19-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) water samples collected on 01-16-01.

The samples and their associated QC samples were prepared on 01-23-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 01-31-01. The analysis met the intent of method WTPH-D.

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

2. All required holding times for extraction and analysis were met.

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

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

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

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.

for J. Michael Taylor
President
Lionville Laboratory Incorporated

02-22-01
Date

R:\group\hplc\narr\dro\01-800tnu.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 9 pages.

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2/12/01

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike reagent grade water spiked with the matrix spiking solution. Spike recoveries are reported.

BSD = Indicates a blank spike duplicate.

MS = Indicates a matrix spike.

MSD = Indicates a matrix spike duplicate.

NA = Not Applicable.

NS = Not spiked.

DF = Dilution factor.

NR = Not required.

SP = Indicates a spiked compound.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 02/07/01 08:11

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1

	Cust ID:	B118V2	B118V2	B118V2	B118V3	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE0079-MB1	01LE0079-MB1
	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
	p-Terphenyl	44 %	55 %	50 %	62 %	44 %	72 %
Diesel Range Organics		0.11 U	70 %	56 %	0.11 U	0.10 U	73 %

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

RECRA LabNet Use Only: 0101L800

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hanford B01-048
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 1.19.01 Date Due: 2-18-01
Account #:

		A,B,C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	16	16					16		16	16	16	16	16	
#/Type Container	Liquid	3ag	2Ag	2ag					1P		1p	1p	1P	2ag		
	Solid		0	0												
Volume	Liquid	40	950	950					500		125	500	500	950		
	Solid															
Preservatives		HCL	—	—					HNO3		—	—	H2SO4	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		Tot VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	TPH	IC Anions	Ammonia	TPH		
RECRA LabNet Use Only		OLC24H	OLC25X	OPC13					MET1		TPH	IC1	NH3N	OPO4		

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	OLC24H	OLC25X	OPC13					MET1		TPH	IC1	NH3N	OPO4		
001	B118V2	✓	✓	W	1/16/01	1930	X	X	X					X		X	X	X	X		
002	B118V3			1	1	2015	X (1)	X (1)	X (1)					X		X	X (2 sp 001)	X	X (1)		

Special Instructions: SAF B01-048
Run matrix QC on #001
IC(1): Cl, Fl, NO3, NO2, PO4, SO4
Met(1): Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Se, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container per VOA, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # See below
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N (002 003)

COC Tape was: 1) Present on Outer Package Y or N; 2) Unbroken on Outer Package Y or N; 3) Present on Sample Y or N; 4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.0 °C

Relinquished by	Received by	Date	Time
FedEx	D. [illegible]	1/19/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 1735

0101LZUU

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality:	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERC99.052 L1041	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A0102Q2	Bill of Lading/Air Bill No.: 4250 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS
Rf-1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH <2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	1	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml
SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPH; D 8015-M

Sample No.	Matrix *	Sample Date	Sample Time									
B118V2	WATER	01/16/01	1930	X	X	X	X	X	X		X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	01/16/01 2145	Standin / Ref 2-B	01/16/01 2145
Remov Trc / Ref 2-A 3728	1.18.01 0900	R.J. Thorell / R.J. Thorell	1.18.01 0400
R.J. Thorell / R.J. Thorell	1.18.01 0900	FED EX	
Fed Ex	1.19.01 0945	D. Smith	1.19.01 0945

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium}; Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec. - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 = Total Sr~~ and Gross Alpha Gross Beta
B118V2 Full Volume Run Lab Q.C. This Sample

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Date/Time
Collector not available to relinquish samples on 1/18/01 for shipment. RT Date/Time 1-18-01

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERL99-052 (ofl)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4235 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-18-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG	P	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	500mL 1000 ml RT 1-18-01	1000 ml

SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH-D 8015M
Sample No. / Matrix * / Sample Date / Sample Time										
B118V3 / WATER / 01/16/01 / 2015		X	X	X	X	X	X	X		X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg	01/16/01 2145	Received By: Signature	2145
Relinquished By: Removed from Ref 2-A 3728	1-18-01 0900	Received By: R. Thorsen	1-18-01 0900
Relinquished By: R. Thorsen	1-18-01 0900	Received By: FEDEX	
Relinquished By: Fed Ex	1.19.01 0945	Received By: D. Jacques	1.19.01 0945
Relinquished By		Received By	
Relinquished By		Received By	

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(4) ~~Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec--Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~
~~Rad Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/18/01. Collector not available to relinquish samples on 1/18/01 for shipment. RT 1-18-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 1 19-01 0945

SDG#: 0101L800

Work Order Number: — SAF# B01-048

Shipping Container ID: ERC99-052 Chain of Custody # B01-048-01,02

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 2.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? no2 no3 Yes [✓] No [ ]

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

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

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

Sample Custodian/Laboratory: Donna Smith Date: 1 19 01

Telephoned to: _____ On _____ By _____

MAR 2001
RECEIVED

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 LVL LOT # :0101L800

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B118V2	001	W	01LE0080	01/16/01	01/23/01	02/12/01
B118V2	001 MS	W	01LE0080	01/16/01	01/23/01	02/12/01
B118V2	001 MSD	W	01LE0080	01/16/01	01/23/01	02/12/01
B118V3	002	W	01LE0080	01/16/01	01/23/01	02/12/01

LAB QC:

PBLKNA	MB1	W	01LE0080	N/A	01/23/01	02/12/01
PBLKNA	MB1 BS	W	01LE0080	N/A	01/23/01	02/12/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-048
LVL#: 0101L800
SDG/SAF#: H1219/B01-048

W.O.#: 10985-001-001-9999-00
Date Received: 01-19-01

PCB

The set of samples consisted of two (2) water samples collected on 01-16-01.

The samples and their associated QC samples were extracted on 01-23-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 02-12-01. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8082 for Aroclors only.

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

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

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

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

for J. Michael Taylor
President
Lionville Laboratory Incorporated

03-02-01
Date

pef\r:\group\data\pest\01L-800.pcb

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 01GC072

Initiator: MGB Batch: 01011800 Parameter: ORCB
Date: 2/22/01 Samples: MS MSD Matrix: water
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0080

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-in] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Low 1254 recovery in MS and MSD @ 52% and 52%. The BS was okay

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

report + narrate

4. Project Manager Instructions...signature/date: 2/22/01

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 2/22/01 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rycklak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	__	__ Other: _____

L-WI-006/E-01/01

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/02/01 14:52

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1

70

	Cust ID:	B118V2	B118V2	B118V2	B118V3	PBLKNA	PBLKNA BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE0080-MB1	01LE0080-MB1
	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:	Tetrachloro-m-xylene	70 %	65 %	68 %	65 %	50 %	62 %
	Decachlorobiphenyl	44 %	46 %	46 %	50 %	74 %	69 %
Aroclor-1016		1.0 U	2.2 U	2.2 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		2.0 U	4.3 U	4.3 U	2.0 U	2.0 U	2.0 U
Aroclor-1232		1.0 U	2.2 U	2.2 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	2.2 U	2.2 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	2.2 U	2.2 U	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	52 * %	52 * %	1.0 U	1.0 U	68 %
Aroclor-1260		1.0 U	2.2 U	2.2 U	1.0 U	1.0 U	1.0 U

	Cust ID:	B118V2	B118V3
Sample Information	RFW#:	800-001	800-002
	Matrix:	WATER	WATER
	D.F.:	1.00	1.00
	Units:	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	70 %	65 %
	Decachlorobiphenyl	44 %	50 %
Aroclor-1016		1.0 U	1.0 U
Aroclor-1221		2.0 U	2.0 U
Aroclor-1232		1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U

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

RECRA LabNet Use Only

01011L800

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU - Hanford B01-048

Est. Final Proj. Sampling Date:

Project #: 10985.001-001-9999.00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 1.19.01 Date Due: 2-18-01

Account #:

		A,B	C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	6	6						6		6	6	6	6		
#/Type Container	Liquid	3aq	2Ag	2aq						1P		1P	1P	1P	2aq		
	Solid		2	2													
Volume	Liquid	40	950	950						500		125	500	500	950		
	Solid																
Preservatives		HCL	—	—						HNO_3		—	—	H_2SO_4	—		
ANALYSES REQUESTED		ORGANIC								INORG							
		Tot VOA	BNA	Pest/PCB	Herb					ECP Metal	CN	TPH	IC Anions	Ammonia	TPH		
		RECRA LabNet Use Only															
		OC24H	OC25X	OPCB						Met(1)		TPH	IC(1)	NH3N	OPO4		

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	OC24H	OC25X	OPCB	Met(1)	TPH	IC(1)	NH3N	OPO4
001	B118V2	✓	✓	W	1/16/01	1930	X	X	X	X	X	X	X	X
002	B118V3			1	1	2015	X (1)	X (1)	X (1)	X	X	X (2SO4)	X	X (1)

Special Instructions: Saf B01-048
Run Matrix QC on #001
IC(1): Cl, F, NO_3, NO_2, PO_4, SO_4
Met(1): Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Sr, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container for VOA, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N (TPH 1-19-01) (NO2 NO3)

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.0 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	1/16/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 1735

0101L800

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Lahlberg	Company Contact: D Jacques — Telephone No.: 373-5299	Project Coordinator: TRENT. SJ	Price Code: 7M — Data Turnaround: 45 Days — Air Quality:
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERC99-052 Lid#1	Field Logbook No.: EL 1517-1 — COA: B200CS6100	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A0102 02	Bill of Lading/Air Bill No.: 4250 7954-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS
RT 1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH < 2 Cool 4C	HNO3 to pH < 2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH < 2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	1	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPH; D
B118V2	WATER	01/16/01	1930	X	X	X	X	X	X		X		X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fore / R. Lahlberg	01/16/01 2145	Standin R. F. 2-A	01/16/01 2145
Removed by R. Fore 2-A 3728	1.18.01 0900	R. R. Thorne	1.18.01 0400
R. R. Thorne	1.18.01 0900	FED EX	
Fed Ex	1.19.01 0945	D. Amin	1.19.01 0945

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium}; Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~ and ~~Gross Alpha Gross Beta~~
B118V2 Full Volume Run Lab Q.C. This Sample

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Date/Time
Collector not available to relinquish samples on 1/18/01 for shipment. RT Date/Time 1-18-01

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques — Telephone No.: 373-5299	Project Coordinator: TRENT, SJ	Price Code: 7M — Data Turnaround: 45 Days — Air Quality
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERL 99-052 (ofl)	Field Logbook No.: EL 1517-1 — COA: B200CS6100	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4238 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-18-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG		aG
No. of Container(s)	1	1	1	1	1	1	1	1		1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	~~500mL~~ 1000 ml RT 1/18/01	1000 ml
SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH-D 8015M

Sample No.	Matrix *	Sample Date	Sample Time										
B118V3	WATER	01/16/01	2015	/	X	X	X	X	X	X	X		X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	01/16/01 2145	Ref 2-A	01/16/01 2145
Removed from Ref 2-A 3728	1-18-01 0900	R. Thorson	1-18-01 0900
R. Thorson	1.18.01 0900	FEDEX	
FedEx	1.19.01 0945	D. Jacques	1.19.01 0945

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(4) ~~Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~
~~Rad Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Collector not available to relinquish samples on 1/18/01 for shipment. RT 1-18-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 1 19-01 0945

SDG#: 0101L800

Work Order Number: — SAF# B01-048

Shipping Container ID: ERC99-052 Chain of Custody # B01-048-01,02

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 2.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? no2 no3 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): N/A

Sample Custodian/Laboratory: Donna Amid Date: 1 19 01

Telephoned to: _____ On _____ By _____

MAR 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 RFW LOT # :010

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B118V2	001	W	01LE0078	01/16/01	01/23/01	02/09/01
B118V2	001 MS	W	01LE0078	01/16/01	01/23/01	02/09/01
B118V2	001 MSD	W	01LE0078	01/16/01	01/23/01	02/09/01
B118V3	002	W	01LE0078	01/16/01	01/23/01	02/09/01
LAB QC:						
SBLKOX	MB1	W	01LE0078	N/A	01/23/01	02/09/01
SBLKOX	MB1 BS	W	01LE0078	N/A	01/23/01	02/09/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-048
LVL#: 0101L800
SDG/SAF#: H1219/B01-048

W.O.#: 10985-001-001-9999-00
Date Received: 01-19-01

SEMIVOLATILE

The set of samples consisted of two (2) water samples collected on 01-16-01.

The samples and their associated QC samples were extracted on 01-23-00 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 02-09-01.

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

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

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

3. Non-target compounds were identified in these samples.

4. One (1) of thirty-six (36) surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).

5. Two (2) of eleven (11) blank spike recoveries were outside acceptance criteria.

6. All matrix spike recoveries were within EPA QC limits. One (1) of eleven (11) %RPD were outside EPA QC limits.

7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at levels less than the CRQL.

8. All internal standard area and retention time criteria were met.

9. The response for the target compound Di-n-Octylphthalate did not meet continuing calibration criteria for the calibration performed on 02-09-01 on Instrument 5972D. The data reflected an increase in instrument response; consequently, the ability to identify this compound was not impaired. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

8. Internal standard area criteria were not met for sample B117V8, it's matrix spike and matrix spike duplicate, and blank spike 00LE0041. The analyses of the matrix QC fulfills the reanalysis requirements for B117V8 and it's QC. The blank spike was re-analyzed.

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

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

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

for J. Michael Taylor
President
Lionville Laboratory Incorporated

02-23-01
Date

pef\gorup\data\bna\tnu-hanford-01-734.doc

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: C1MS083

Initiator: John W. Smith Batch: 0101L800 Parameter: 625X
Date: 2/12/01 Samples: ALL Matrix: WATER
Client: TWU Hanford Bq-043 H1219 Method: SW846/MCAWW/CLP/ Prep Batch: 01L00078

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Di-n-octyl phthalate exceeds 20% Criteria in daily check std. (31.3%)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

Analyte quantitation would be biased high. Cmpd not detected

Report + narrate

2/12/01

4. Project Manager Instructions...signature/date: _____

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: DAC 2/12/01

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stops/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wessen/Daniels	__	__ MS: Rycklak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	__	__ Other: _____

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 02/12/01 10:46

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1a

	Cust ID:	B118V2		B118V2		B118V2		B118V3		SBLKOX		SBLKOX BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LE0078-MB1		01LE0078-MB1	
	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	Nitrobenzene-d5	70	%	67	%	77	%	72	%	66	%	95	%
	2-Fluorobiphenyl	69	%	65	%	79	%	74	%	74	%	90	%
	p-Terphenyl-d14	77	%	63	%	88	%	93	%	98	%	103	%
	Phenol-d5	61	%	72	%	29	%	43	%	51	%	113 *	%
	2-Fluorophenol	70	%	64	%	77	%	71	%	65	%	93	%
	2,4,6-Tribromophenol	58	%	61	%	74	%	71	%	77	%	85	%
			fl		fl		fl		fl		fl		fl
Phenol		11	U	65	%	79	%	11	U	10	U	105	%
bis(2-Chloroethyl)ether		11	U	20	U	24	U	11	U	10	U	10	U
2-Chlorophenol		11	U	69	%	79	%	11	U	10	U	104	%
1,3-Dichlorobenzene		11	U	20	U	24	U	11	U	10	U	10	U
1,4-Dichlorobenzene		11	U	56	%	66	%	11	U	10	U	83	%
1,2-Dichlorobenzene		11	U	20	U	24	U	11	U	10	U	10	U
2-Methylphenol		11	U	20	U	24	U	11	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		11	U	20	U	24	U	11	U	10	U	10	U
4-Methylphenol		11	U	20	U	24	U	11	U	10	U	10	U
N-Nitroso-Di-n-propylamine		11	U	72	%	79	%	11	U	10	U	110	%
Hexachloroethane		11	U	20	U	24	U	11	U	10	U	10	U
Nitrobenzene		11	U	20	U	24	U	11	U	10	U	10	U
Isophorone		11	U	20	U	24	U	11	U	10	U	10	U
2-Nitrophenol		11	U	20	U	24	U	11	U	10	U	10	U
2,4-Dimethylphenol		11	U	20	U	24	U	11	U	10	U	10	U
bis(2-Chloroethoxy)methane		11	U	20	U	24	U	11	U	10	U	10	U
2,4-Dichlorophenol		11	U	20	U	24	U	11	U	10	U	10	U
1,2,4-Trichlorobenzene		11	U	57	%	68	%	11	U	10	U	81	%
Naphthalene		11	U	20	U	24	U	11	U	10	U	10	U
4-Chloroaniline		11	U	20	U	24	U	11	U	10	U	10	U
Hexachlorobutadiene		11	U	20	U	24	U	11	U	10	U	10	U
4-Chloro-3-methylphenol		11	U	66	%	82	%	11	U	10	U	102 *	%
2-Methylnaphthalene		11	U	20	U	24	U	11	U	10	U	10	U
Hexachlorocyclopentadiene		11	U	20	U	24	U	11	U	10	U	10	U
2,4,6-Trichlorophenol		11	U	20	U	24	U	11	U	10	U	10	U
2,4,5-Trichlorophenol		27	U	50	U	60	U	27	U	25	U	25	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1b

Cust ID:	B118V2		B118V2		B118V2		B118V3		SBLKOX		SBLKOX BS	
RFW#:	001		001 MS		001 MSD		002		01LE0078-MB1		01LE0078-MB1	
2-Chloronaphthalene	11	U	20	U	24	U	11	U	10	U	10	U
2-Nitroaniline	27	U	50	U	60	U	27	U	25	U	25	U
Dimethylphthalate	11	U	20	U	24	U	11	U	10	U	10	U
Acenaphthylene	11	U	20	U	24	U	11	U	10	U	10	U
2,6-Dinitrotoluene	11	U	20	U	24	U	11	U	10	U	10	U
3-Nitroaniline	27	U	50	U	60	U	27	U	25	U	25	U
Acenaphthene	11	U	60	%	76	%	11	U	10	U	88	%
2,4-Dinitrophenol	27	U	50	U	60	U	27	U	25	U	25	U
4-Nitrophenol	27	U	56	%	67	%	27	U	25	U	83 *	%
Dibenzofuran	11	U	20	U	24	U	11	U	10	U	10	U
2,4-Dinitrotoluene	11	U	55	%	66	%	11	U	10	U	82	%
Diethylphthalate	11	U	20	U	24	U	11	U	10	U	10	U
4-Chlorophenyl-phenylether	11	U	20	U	24	U	11	U	10	U	10	U
Fluorene	11	U	20	U	24	U	11	U	10	U	10	U
4-Nitroaniline	27	U	50	U	60	U	27	U	25	U	25	U
4,6-Dinitro-2-methylphenol	27	U	50	U	60	U	27	U	25	U	25	U
N-Nitrosodiphenylamine (1)	11	U	20	U	24	U	11	U	10	U	10	U
4-Bromophenyl-phenylether	11	U	20	U	24	U	11	U	10	U	10	U
Hexachlorobenzene	11	U	20	U	24	U	11	U	10	U	10	U
Pentachlorophenol	27	U	54	%	66	%	27	U	25	U	79	%
Phenanthrene	11	U	20	U	24	U	11	U	10	U	10	U
Anthracene	11	U	20	U	24	U	11	U	10	U	10	U
Carbazole	11	U	20	U	24	U	11	U	10	U	10	U
Di-n-Butylphthalate	11	U	20	U	2	J	11	U	10	U	10	U
Fluoranthene	11	U	20	U	24	U	11	U	10	U	10	U
Pyrene	11	U	48	%	78	%	11	U	10	U	86	%
Butylbenzylphthalate	11	U	20	U	24	U	11	U	10	U	10	U
3,3'-Dichlorobenzidine	11	U	20	U	24	U	11	U	10	U	10	U
Benzo(a)anthracene	11	U	20	U	24	U	11	U	10	U	10	U
Chrysene	11	U	20	U	24	U	11	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	3	JB	3	JB	4	JB	1	JB	1	J	1	JB
Di-n-Octyl phthalate	11	U	20	U	24	U	11	U	10	U	10	U
Benzo(b)fluoranthene	11	U	20	U	24	U	11	U	10	U	10	U
Benzo(k)fluoranthene	11	U	20	U	24	U	11	U	10	U	10	U
Benzo(a)pyrene	11	U	20	U	24	U	11	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	11	U	20	U	24	U	11	U	10	U	10	U
Dibenzo(a,h)anthracene	11	U	20	U	24	U	11	U	10	U	10	U
Benzo(g,h,i)perylene	11	U	20	U	24	U	11	U	10	U	10	U
Tributylphosphate	11	U	20	U	24	U	11	U	10	U	10	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B118V2

Lab Name: Lionville Labs, Inc. Work Order: 10985001001

Client: TNUHANFORD B01-048 H1219

Matrix: (soil/water) WATER

Lab Sample ID: 0101L800-001

Sample wt/vol: 920 (g/mL) ML

Lab File ID: D020915

Level: (low/med) LOW

Date Received: 01/19/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 01/23/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/09/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.534	2	J
2.	UNKNOWN	20.359	2	J
3.	UNKNOWN	22.758	2	J
4.	UNKNOWN	23.019	2	J
5.	UNKNOWN	23.427	2	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B118V3

Lab Name: Lionville Labs, Inc. Work Order: 10985001001

Client: TNUHANFORD B01-048 H1219

Matrix: (soil/water) WATER

Lab Sample ID: 0101L800-002

Sample wt/vol: 930 (g/mL) ML

Lab File ID: D020918

Level: (low/med) LOW

Date Received: 01/19/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 01/23/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/09/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKOX

Lab Name: Lionville Labs, Inc. Work Order: 10985001001

Client: TNUHANFORD B01-048 H1219

Matrix: (soil/water) WATER

Lab Sample ID: 01LE0078-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: D020911

Level: (low/med) LOW

Date Received: 01/23/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 01/23/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/09/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.713	3	J
2.	UNKNOWN	6.947	3	J
3.	UNKNOWN	11.893	4	J

RECRA LabNet Use Only: 0101L800

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: Tnu - Hanford B01-048
Est. Final Proj. Sampling Date:
Project #: 10985c001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 1.19.01 Date Due: 2-18-01
Account #:

		A,B,C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid	3aq	2Aq	2aq					1P		1P	1P	1P	2aq		
	Solid		0	0												
Volume	Liquid	40	950	950					500		125	500	500	950		
	Solid															
Preservatives		HCL	—	—					HNO3		—	—	H2SO4	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		Tot VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	pH	IC Anions	Ammonia	TPH		

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	OLC24H	OLC25X	OPC13				Met(1)		HCI	IC(1)	NH3N	ODRO
001	B118V2	✓	✓	W	1/16/01	1930	X	X	X				X		X	X	X	X
002	B118V3			1	1	2015	X (2)	X (2)	X (2)				X		X	X (250ml)	X	X (2)

RECRA LabNet Use Only

Special Instructions: Saf B01-048
Run Matrix QC on #001
IC(1): Cl, Fl, NO3, NO2, PO4, SO4
Met(1): Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Sc, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container per Voa, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N (002 003)

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 2.0 °C

Relinquished by	Received by	Date	Time
FedEx	[signature]	1/19/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 1735

0101L80U

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-048-01 | Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques — Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality: [ ]
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048
Ice Chest No.: ERC99.052 Lid1	Field Logbook No.: EL 1517-1 — COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4258 7954-1735

POSSIBLE SAMPLE HAZARDS/REMARKS

RT 1-18-01 Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH 2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	1	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml
SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPH: D 8015-M

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPH: D 8015-M
B118V2	WATER	01/16/01	1930	X	X	X	X	X	X		X		X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	01/16/01 2145	Stored in Ref 2-A	01/16/01 2145
~~Removalite~~	~~0900~~	R J Thorell	0400 1.18.01
Ref 2-A 3728	1.18.01		
R J Thorell	1.18.01 0900	FED EX	
Fed Ex	1.19.01 0945		1.19.01 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

I 180

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
~~(4) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 = Total Sr~~ and
B118V2 Full Volume Run Lab Q.C. This Sample

RT 1-18-01

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01.
Collector not available to relinquish samples on 1/18/01 for shipment. RT 1-18-01

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality:	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No: ERL99-052 (ofl)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4236 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-18-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG		aG
No. of Container(s)	1	1	1	1	1	1	1	1		1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	~~500mL~~ 1000 mL RT 1-18-01	1000 mL

SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH-D 8015M

Sample No.	Matrix *	Sample Date	Sample Time									
B118V3	WATER	01/16/01	2015	/	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	01/16/01 2145	Ref 2-A	01/16/01 2145
Ref 2-A 3728	1-18-01 0900	R. Thorner	1-18-01 0900
R. Thorner	1.18.01 0900	FEDEX	
FedEx	1.19.01 0945	D. Jones	1.19.01 0945

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(4) ~~Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228), Isotopic Plutonium, Isotopic Thorium, Isotopic Uranium, Americium-241, Neptunium-237, Strontium-89,90 -- Total Sr~~
~~Rad Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Collector not available to relinquish samples on 1/16/01 for shipment.

RT 1-18-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 1 19-01 0945

SDG#: 0101L800

Work Order Number: — SAF# B01-048

Shipping Container ID: ERC99-052 Chain of Custody # B01-048-01,02

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 2.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? no2 no3 Yes [✓] No [ ]

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

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

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

Sample Custodian/Laboratory: [signature] Date: 1 19 01

Telephoned to: _____ On _____ By _____

MAR 2001
RECEIVED

Lionville Laboratory Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-048 H1219

DATE RECEIVED: 01/19/01 RFW LOT # :0101L800

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B118V2	001	W	01LVX028	01/16/01	N/A	01/24/01
B118V2	001 MS	W	01LVX028	01/16/01	N/A	01/24/01
B118V2	001 MSD	W	01LVX028	01/16/01	N/A	01/24/01
B118V3	002	W	01LVX028	01/16/01	N/A	01/24/01
LAB QC:						
VBLKLQ	MB1	W	01LVX028	N/A	N/A	01/24/01
VBLKLQ	MB1 BS	W	01LVX028	N/A	N/A	01/24/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-048
LVL#: 0101L800
SDG/SAF #: H1219/B01-048

W.O. #: 10985-001-001-9999-00
Date Received: 01-19-01

GC/MS VOLATILE

The set of samples consisted of two (2) water samples collected on 01-16-01.

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 01-24-01.

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. All samples were analyzed within required holding time.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL and the target compound Chloromethane and Bromomethane at levels less than the CRQL.
8. All 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

02-26-01
Date

pef\group\data\voa\tnu-hanford-01-800.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

GLOSSARY OF 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: 02/03/01 10:52

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1a

	Cust ID:	B118V2		B118V2		B118V2		B118V3		VBLKLQ		VBLKLQ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LVX028-MB1		01LVX028-MB1	
	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	97	%	97	%	94	%	97	%	98	%	94	%
	Bromofluorobenzene	84	%	85	%	82	%	83	%	85	%	84	%
	1,2-Dichloroethane-d4	87	%	86	%	88	%	87	%	93	%	87	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	1	J	10	U
Bromomethane		10	U	10	U	10	U	10	U	2	J	2	JB
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		5	JB	5	B	2	JB	4	JB	5		5	B
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		4	J	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	83	%	81	%	5	U	5	U	83	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	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		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	86	%	87	%	5	U	5	U	86	%
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	90	%	89	%	5	U	5	U	90	%
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	92	%	91	%	5	U	5	U	93	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0101L800** Client: **TNUHANFORD B01-048 H1219** Work Order: 10985001001 Page: 1b

9

Cust ID:	B118V2		B118V2		B118V2		B118V3		VBLKLQ		VBLKLQ BS	
RFW#:	001		001 MS		001 MSD		002		01LVX028-MB1		01LVX028-MB1	
Chlorobenzene	5	U	89	%	89	%	5	U	5	U	90	%
Ethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	5	U	5	U	5	U	5	U	5	U
Xylene (total)	5	U	5	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only: 0101L800

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hanford B01-048
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 1-19-01 Date Due: 2-18-01
Account #:

		A,B,C	D,E	F,G					H		I	J	K	L,M		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid	3aq	2Ag	2aq					1P		1p	1p	1P	2aq		
	Solid		1	1												
Volume	Liquid	40	950	960					500		125	500	500	950		
	Solid															
Preservatives		HCl	—	—					HNO_3		—	—	H_2SO_4	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA	Pest/PCB	Herb				HCP Metal	CN	pH	IC Anions	Ammonia	TPH		
		RECRA LabNet Use Only														
		OLC24H	OLC25X	OPCB					Mc+①		TPH	IC①	NH3N	CODD		

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OLC24H	OLC25X	OPCB					Mc+①		TPH	IC①	NH3N	CODD		
	001	B118V2	✓	✓	W	1/16/01	1930	X	X	X					X		X	X	X	X		
	002	B118V3			⊥	⊥	2015	X (1)	X (1)	X (1)					X		X	X (250 ml)	X	X (1)		

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

Special Instructions: Saf B01-048
Run matrix QC on #001
IC①: Cl, Fl, NO_3, NO_2, PO_4, SO_4
Mc+①: Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sb, V, Zn, As, Bi, Pb, P, Se, Sr, Tl, Hg

DATE/REVISIONS:
1. only received 1 sample
2. Container for VOA, BNA, PCB,
3. + TPH analysis for sample #002
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N (TPH 1-19-01; NO_2 NO_3)

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.0 °C

Relinquished by	Received by	Date	Time
FedEx	[signature]	1/19/01	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 1735

01011800 00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques — Telephone No.: 373-5299	Project Coordinator: TRENT, SJ	Price Code: 7M — Data Turnaround: 45 Days
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	Air Quality ☐
Ice Chest No.: ERC99.052 Lid#1	Field Logbook No.: EL 1517-1 — COA: B200CS6100	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A#102202	Bill of Lading/Air Bill No.: 4258 7454-1735	

POSSIBLE SAMPLE HAZARDS/REMARKS
RT 1-18-01
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	Cool 4C	H2SO4 to pH < 2 Cool 4C	HNO3 to pH < 2	Cool 4C	Cooled to 4C	Cool 4C	HCl to pH <2 Cool 4C	HNO3 to pH < 2	None
Type of Container	P	P	P	P	aG	aG	aGs*	aGs*	P	aG
No. of Container(s)	1	1	1	1	2	2	3	3	4	2
Volume	120mL	500mL	500mL	500mL	1000mL	1000mL	40mL	40mL	1000mL	1000 ml

SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	See item (4) in Special Instructions	TPHiD 8015-M
Sample No. / Matrix * / Sample Date / Sample Time										
B118V2 / WATER / 01/16/01 / 1930	X	X	X	X	X	X		X		X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: R Fahlberg / R Fahlberg	01/16/01 2145	Received By: Stored in Ref 2-A	01/16/01 2145
Relinquished By: Removed from Ref 2-A 3728	1.18.01 0900	Received By: R Thorem	1.18.01 0900
Relinquished By: R Thorem	1.18.01 0900	Received By: FED EX	
Relinquished By: FED EX	1.19.01 0945	Received By: [illegible]	1.19.01 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 1-18-01

SPECIAL INSTRUCTIONS
** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium}; Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~ ~~Gross Alpha Gross Beta~~
B118V2 Full Volume Run Lab Q.C. This Sample

RT 1-18-01

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

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01.
Collector not available to relinquish samples on 1/18/01 for shipment.
RT 1-18-01

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

BHI-EE-011 (10/99)

5

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-048-02	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 7M	Data Turnaround: 45 Days	Air Quality	
Project Designation: 221-U QC Sampling - Water	Sampling Location: 221 U	SAF No.: B01-048	
Ice Chest No.: ERL 99-052 (of 1)	Field Logbook No.: EL 1517-1	COA: B200CS6100	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010202	Bill of Lading/Air Bill No.: 4236 7454 - 1735	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-18-01

Special Handling and/or Storage

Preservation	Cool 4C	HCl to pH <2 Cool 4C	None	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cooled to 4C	HNO3 to pH <2	None
Type of Container	aGs*	aGs*	P	P	P	P	aG	aG		aG
No. of Container(s)	1	1	1	1	1	1	1	1		1
Volume	40mL	40mL	120mL	250mL	500mL	500mL	1000mL	1000mL	~~500mL~~ 1000 mL RT 1/16/01	1000 mL
SAMPLE ANALYSIS	Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene)	VOA - 8260A (TCL)	pH (Water) - 9040	See item (1) in Special Instructions	Ammonia - 350.3	See item (2) in Special Instructions	See item (3) in Special Instructions	PCBs - 8082	See item (4) in Special Instructions	TPH-D 8015M

Sample No.	Matrix *	Sample Date	Sample Time										
B118V3	WATER	01/16/01	2015		X	X	X	X	X	X	X		X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	2145 01/16/01	Sfoulin	2145 01/16/01
Relinquished by: Removed from Ref 2-A 3728	0900 1-18-01	Received By: R. Thorson	0900 1-18-01
Relinquished By: R. Thorson	0900 1.18.01	Received By: FEDEX	Date/Time
Relinquished By: FEDEX	1.19.01 0945	Received By: D. Jacques	1.19.01 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 1-18-01

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Bismuth, Lead, Phosphorus, Selenium, Strontium, Thallium); Mercury - 7470 - (CV)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
~~(4) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium; Isotopic Uranium; Americium-241; Neptunium-237; Strontium-89,90 -- Total Sr~~
~~and Gross Alpha / Gross Beta~~

RT 1-18-01

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 1/16/01. Collector not available to relinquish samples on 1/18/01 for shipment.

RT 1-18-01 Date/Time

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

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 1 19-01 0945

SDG#: 01016800

Work Order Number: — SAF# B01-048

Shipping Container ID: ERC99-052 Chain of Custody # B01-048-01,02

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 2.0°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? no2 no3 Yes [✓] No [ ]

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

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

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

Sample Custodian/Laboratory: [signature] Date: 1 19 01

Telephoned to: _____ On _____ By _____

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