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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1686 was composed of one water sample designated under SAF No. B01-114 with a Project Designation of: PFP Well Installation Sampling and Analysis – Water.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on March 22, 2002.

2.0 ANALYSIS NOTES

2.1 *Gross Alpha and Gross Beta Analyses*

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

The LCS and method blank were not scaled to the nominal aliquot of 0.01 L. No problems were encountered during the course of the analyses.

2.3 *Total Strontium Analyses*

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium 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 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa C. Mannion
Program Manager

3/22/02
Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

SDG 7217
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1686

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12XM1	200 West, Well No. C3803	WATER		R201202-01	B01-114	B01-114-09	01/24/02 20:19
Method Blank		WATER		R201202-03	B01-114		
Lab Control Sample		WATER		R201202-02	B01-114		
Duplicate (R201202-01)	200 West, Well No. C3803	WATER		R201202-04	B01-114		01/24/02 20:19
Spike (R201202-01)	200 West, Well No. C3803	WATER		R201202-05	B01-114		01/24/02 20:19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

SDG 7217
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1686

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
7217	B01-114-09	B12XM1	WATER		6.375 L		01/28/02	4	R201202-01	7217-001
		Method Blank	WATER						R201202-03	7217-003
		Lab Control Sample	WATER						R201202-02	7217-002
		Duplicate (R201202-01)	WATER		6.375 L		01/28/02	4	R201202-04	7217-004
		Spike (R201202-01)	WATER		6.375 L		01/28/02	4	R201202-05	7217-005

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

SDG 7217
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1686

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	7024-033	5.0	1			1	1	1/1		
NP	WATER	Neptunium in Water	7024-033	5.0	1			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	7024-033	5.0	1			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	7024-033	5.0	1			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	7024-033	10.0	1			1	1	1/1		
TC	WATER	Technetium 99 in Water	7024-033	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	7024-033	20.0	1			1	1	1/1		
93B	WATER	Gross Beta in Water	7024-033	15.0	1			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	7024-033	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	7024-033	10.0	1			1	1	1/1	1/1	X

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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

SDG 7217
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1686

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12XM1			R201202-01	7217-001	93A/93		03/12/02	03/21/02	MCM	Gross Alpha in Water
200 West, Well No. C3803		WATER	01/24/02	7217-001	93B/93		03/12/02	03/21/02	MCM	Gross Beta in Water
B01-114-09	B01-114		01/28/02	7217-001	AM		03/19/02	03/21/02	MCM	Americium 241 in Water
				7217-001	GAM		03/13/02	03/21/02	MCM	Gamma Emitters
				7217-001	H		03/13/02	03/21/02	MCM	Tritium in Water
				7217-001	NP		03/20/02	03/21/02	MCM	Neptunium in Water
				7217-001	PU		03/19/02	03/21/02	MCM	Plutonium, Isotopic in Water
				7217-001	SR		03/15/02	03/21/02	MCM	Total Strontium in Water
				7217-001	TC		03/13/02	03/21/02	MCM	Technetium 99 in Water
				7217-001	U		03/15/02	03/21/02	MCM	Uranium, Isotopic in Water
Method Blank			R201202-03	7217-003	93A/93		03/12/02	03/21/02	MCM	Gross Alpha in Water
		WATER		7217-003	93B/93		03/12/02	03/21/02	MCM	Gross Beta in Water
	B01-114			7217-003	AM		03/19/02	03/21/02	MCM	Americium 241 in Water
				7217-003	GAM		03/13/02	03/21/02	MCM	Gamma Emitters
				7217-003	H		03/07/02	03/21/02	MCM	Tritium in Water
				7217-003	NP		03/20/02	03/21/02	MCM	Neptunium in Water
				7217-003	PU		03/18/02	03/21/02	MCM	Plutonium, Isotopic in Water
				7217-003	SR		03/15/02	03/21/02	MCM	Total Strontium in Water
				7217-003	TC		03/12/02	03/21/02	MCM	Technetium 99 in Water
				7217-003	U		03/15/02	03/21/02	MCM	Uranium, Isotopic in Water
Lab Control Sample			R201202-02	7217-002	93A/93		03/13/02	03/21/02	MCM	Gross Alpha in Water
		WATER		7217-002	93B/93		03/13/02	03/21/02	MCM	Gross Beta in Water
	B01-114			7217-002	AM		03/20/02	03/21/02	MCM	Americium 241 in Water
				7217-002	GAM		03/13/02	03/21/02	MCM	Gamma Emitters
				7217-002	H		03/07/02	03/21/02	MCM	Tritium in Water
				7217-002	NP		03/20/02	03/21/02	MCM	Neptunium in Water
				7217-002	PU		03/18/02	03/21/02	MCM	Plutonium, Isotopic in Water
				7217-002	SR		03/15/02	03/21/02	MCM	Total Strontium in Water
				7217-002	TC		03/13/02	03/21/02	MCM	Technetium 99 in Water
				7217-002	U		03/15/02	03/21/02	MCM	Uranium, Isotopic in Water

Lab id TMANC
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Form DVD-CWS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

SDG 7217
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1686

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R201202-01)			R201202-04	7217-004	93A/93		03/12/02	03/21/02	MCM	Gross Alpha in Water
200 West, Well No. C3803		WATER	01/24/02	7217-004	93B/93		03/12/02	03/21/02	MCM	Gross Beta in Water
	B01-114		01/28/02	7217-004	AM		03/19/02	03/21/02	MCM	Americium 241 in Water
				7217-004	GAM		03/14/02	03/21/02	MCM	Gamma Emitters
				7217-004	H		03/13/02	03/21/02	MCM	Tritium in Water
				7217-004	NP		03/21/02	03/21/02	MCM	Neptunium in Water
				7217-004	PU		03/18/02	03/21/02	MCM	Plutonium, Isotopic in Water
				7217-004	SR		03/15/02	03/21/02	MCM	Total Strontium in Water
				7217-004	TC		03/13/02	03/21/02	MCM	Technetium 99 in Water
				7217-004	U		03/15/02	03/21/02	MCM	Uranium, Isotopic in Water
Spike (R201202-01)			R201202-05	7217-005	H		03/07/02	03/21/02	MCM	Tritium in Water
200 West, Well No. C3803		WATER	01/24/02							
	B01-114		01/28/02							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B01-114	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
93B/93	B01-114	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
AM	B01-114	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
GAM	B01-114	Gamma Emitters	GAMMA_GS	1			1	1	1		4
H	B01-114	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
NP	B01-114	Neptunium in Water	NP237_LLE_PLATE_AEA	1			1	1	1		4
PU	B01-114	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	1			1	1	1		4
SR	B01-114	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
TC	B01-114	Technetium 99 in Water	TC99_TR_SEP_LSC	1			1	1	1		4
U	B01-114	Uranium, Isotopic in Water	UISO_PLATE_AEA	1			1	1	1		4
TOTALS				10			10	10	10	1	41

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1686

R201202-03 **Method Blank**

METHOD BLANK

SDG	7217	Client/Case no	Hanford	SDG H1686	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201202-03	Client sample id	Method Blank		
Dept sample id	7217-003	Material/Matrix		WATER	
		SAF No	B01-114		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.102	0.82	1.6	3.0	U	93A
Gross Beta	12587-47-2	-0.594	2.2	3.8	4.0	U	93B
Tritium	10028-17-8	6.06	12	19	400	U	H
Total Strontium	SR-RAD	-0.029	0.31	0.65	2.0	U	SR
Technetium 99	14133-76-7	-0.280	3.1	10	15	U	TC
Uranium 233/234	U-233/234	-0.043	0.086	0.33	1.0	U	U
Uranium 235	15117-96-1	0	0.10	0.40	1.0	U	U
Uranium 238	U-238	0	0.086	0.33	1.0	U	U
Neptunium 237	13994-20-2	0.021	0.064	0.14	1.0	U	NP
Plutonium 238	13981-16-3	0.029	0.058	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.029	0.058	0.22	1.0	U	PU
Americium 241	14596-10-2	-0.035	0.21	0.43	1.0	U	AM
Potassium 40	13966-00-2	U		210		U	GAM
Cobalt 60	10198-40-0	U		11	25	U	GAM
Ruthenium 106	13967-48-1	U		110		U	GAM
Antimony 125	14234-35-6	U		28		U	GAM
Cesium 137	10045-97-3	U		13	15	U	GAM
Radium 226	13982-63-3	U		25		U	GAM
Radium 228	15262-20-1	U		55		U	GAM
Europium 152	14683-23-9	U		32	50	U	GAM
Europium 154	15585-10-1	U		30	50	U	GAM
Europium 155	14391-16-3	U		40	50	U	GAM
Thorium 228	14274-82-9	U		17		U	GAM
Thorium 232	TH-232	U		55		U	GAM
Uranium 235	15117-96-1	U		49		U	GAM
Uranium 238	U-238	U		1600		U	GAM
Americium 241	14596-10-2	U		90		U	GAM

PFP Well Installation Smpl. & Analy.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/22/02

B L A N K , c o n t .

SDG	7217	Client/Case no	Hanford	SDG H1686	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201202-03	Client sample id	Method Blank		
Dept sample id	7217-003	Material/Matrix		WATER	
		SAF No	B01-114		

QC-BLANK 41293

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

R201202-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7217
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1686
Case no No. 630

Lab sample id R201202-02
Dept sample id 7217-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B01-114

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	104	7.4	1.9	3.0		93A	100	4.0	104	66-134	70-130
Gross Beta	111	5.5	3.5	4.0		93B	108	4.3	103	75-125	70-130
Tritium	223	18	19	400	J	H	232	9.3	96	81-119	80-120
Total Strontium	43.6	1.2	0.35	2.0		SR	43.2	1.7	101	83-117	80-120
Technetium 99	2260	49	12	15		TC	2180	87	104	83-117	80-120
Uranium 233/234	30.3	3.1	1.6	1.0		U	31.0	1.2	98	82-118	80-120
Uranium 235	26.9	2.9	0.36	1.0		U	25.2	1.0	107	80-120	80-120
Uranium 238	31.2	3.1	1.5	1.0		U	33.7	1.3	93	84-116	80-120
Neptunium 237	32.8	1.3	0.14	1.0		NP	33.1	1.3	99	89-111	80-120
Plutonium 238	23.2	2.2	0.19	1.0		PU	24.6	0.98	94	84-116	80-120
Plutonium 239/240	25.6	2.4	0.19	1.0		PU	26.4	1.1	97	83-117	80-120
Americium 241	19.9	1.7	0.19	1.0		AM	19.1	0.76	104	83-117	80-120
Cobalt 60	385	17	7.8	25		GAM	398	16	97	77-123	80-120
Cesium 137	495	16	11	15		GAM	478	19	104	75-125	80-120

PFP Well Installation Smpl. & Analy.

QC-LCS 41292

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

R201202-04 B12XM1

DUPLICATE

SDG 7217		Client/Case no Hanford	SDG H1686
Contact Melissa C. Mannion		Case no No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R201202-04	Lab sample id R201202-01	Client sample id B12XM1	
Dept sample id 7217-004	Dept sample id 7217-001	Location/Matrix 200 West, Well No. C3803	WATER
	Received 01/28/02	Collected/Volume 01/24/02 20:19	6.375 L
		Custody/SAF No B01-114-09	B01-114

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	0.414	1.1	1.7	3.0	U	93A	0.865	1.1	1.4	U	-	
Gross Beta	6.86	2.1	2.9	4.0		93B	7.74	2.1	2.8		12	69
Tritium	571	130	180	400		H	464	130	190		21	57
Total Strontium	0.084	0.32	0.63	2.0	U	SR	-0.114	0.27	0.46	U	-	
Technetium 99	1.27	3.6	11	15	U	TC	2.40	3.4	10	U	-	
Uranium 233/234	0.203	0.16	0.31	1.0	U	U	0.178	0.18	0.34	U	-	
Uranium 235	0.049	0.098	0.38	1.0	U	U	0	0.11	0.41	U	-	
Uranium 238	0.122	0.16	0.31	1.0	U	U	0.133	0.18	0.34	U	-	
Neptunium 237	0	0.20	0.30	1.0	U	NP	0	0.019	0.074	U	-	
Plutonium 238	0	0.050	0.19	1.0	U	PU	0.046	0.046	0.18	U	-	
Plutonium 239/240	0.075	0.10	0.19	1.0	U	PU	0.046	0.046	0.18	U	-	
Americium 241	0	0.16	0.37	1.0	U	AM	0	0.065	0.25	U	-	
Potassium 40	U		430		U	GAM	U		170	U	-	
Cobalt 60	U		22	25	U	GAM	U		13	U	-	
Ruthenium 106	U		150		U	GAM	U		110	U	-	
Antimony 125	U		39		U	GAM	U		26	U	-	
Cesium 137	U		17	15	U	GAM	U		11	U	-	
Radium 226	U		26		U	GAM	U		19	U	-	
Radium 228	U		73		U	GAM	U		49	U	-	
Europium 152	U		46	50	U	GAM	U		32	U	-	
Europium 154	U		63	50	U	GAM	U		32	U	-	
Europium 155	U		41	50	U	GAM	U		27	U	-	
Thorium 228	U		25		U	GAM	U		16	U	-	
Thorium 232	U		73		U	GAM	U		49	U	-	
Uranium 235	U		58		U	GAM	U		37	U	-	
Uranium 238	U		2100		U	GAM	U		1500	U	-	
Americium 241	U		56		U	GAM	U		38	U	-	

PFP Well Installation Smpl. & Analy.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 03/22/02

DUPLICATE, cont.

SDG 7217		Client/Case no Hanford	SDG H1686
Contact Melissa C. Mannion		Case no No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R201202-04	Lab sample id R201202-01	Client sample id B12XM1	
Dept sample id 7217-004	Dept sample id 7217-001	Location/Matrix 200 West, Well No. C3803	WATER
	Received 01/28/02	Collected/Volume 01/24/02 20:19	6.375 L
		Custody/SAF No B01-114-09	B01-114

QC-DUP#1 41294

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

R201202-05 B12XM1

MATRIX SPIKE

SDG 7217		Client/Case no Hanford	SDG H1686
Contact Melissa C. Mannion		Case no No. 630	
MATRIX SPIKE	ORIGINAL		
Lab sample id R201202-05	Lab sample id R201202-01	Client sample id B12XM1	
Dept sample id 7217-005	Dept sample id 7217-001	Location/Matrix 200 West, Well No. C3803	WATER
	Received 01/28/02	Collected/Volume 01/24/02 20:19	6.375 L
		Custody/SAF No B01-114-09	B01-114

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	31100	540	190	400	X	H	31100	1200	464	130	99	84-116	60-140

PFP Well Installation Smpl. & Analy.

QC-MS#1 41295

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

R201202-01 B12XM1

DATA SHEET

SDG	7217	Client/Case no	Hanford SDG H1686
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R201202-01	Client sample id	B12XM1
Dept sample id	7217-001	Location/Matrix	200 West, Well No. C3803 WATER
Received	01/28/02	Collected/Volume	01/24/02 20:19 6.375 L
		Custody/SAF No	B01-114-09 B01-114

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.865	1.1	1.4	3.0	U	93A
Gross Beta	12587-47-2	7.74	2.1	2.8	4.0		93B
Tritium	10028-17-8	464	130	190	400		H
Total Strontium	SR-RAD	-0.114	0.27	0.46	2.0	U	SR
Technetium 99	14133-76-7	2.40	3.4	10	15	U	TC
Uranium 233/234	U-233/234	0.178	0.18	0.34	1.0	U	U
Uranium 235	15117-96-1	0	0.11	0.41	1.0	U	U
Uranium 238	U-238	0.133	0.18	0.34	1.0	U	U
Neptunium 237	13994-20-2	0	0.019	0.074	1.0	U	NP
Plutonium 238	13981-16-3	0.046	0.046	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.046	0.046	0.18	1.0	U	PU
Americium 241	14596-10-2	0	0.065	0.25	1.0	U	AM
Potassium 40	13966-00-2	U		170		U	GAM
Cobalt 60	10198-40-0	U		13	25	U	GAM
Ruthenium 106	13967-48-1	U		110		U	GAM
Antimony 125	14234-35-6	U		26		U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Radium 226	13982-63-3	U		19		U	GAM
Radium 228	15262-20-1	U		49		U	GAM
Europium 152	14683-23-9	U		32	50	U	GAM
Europium 154	15585-10-1	U		32	50	U	GAM
Europium 155	14391-16-3	U		27	50	U	GAM
Thorium 228	14274-82-9	U		16		U	GAM
Thorium 232	TH-232	U		49		U	GAM
Uranium 235	15117-96-1	U		37		U	GAM
Uranium 238	U-238	U		1500		U	GAM
Americium 241	14596-10-2	U		38		U	GAM

PFP Well Installation Smpl. & Analy.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test AM Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7024-033						
B12XM1	R201202-01			7217-001	U	
BLK (QC ID=41293)	R201202-03			7217-003	U	
LCS (QC ID=41292)	R201202-02			7217-002	ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Analy.						

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 7024-033 2σ prep error 5.0 % Reference Lab Notebook 7024 pg. 033																
B12XM1	R201202-01			0.25	0.500			67		105			54	03/19/02	03/19	SS-050
BLK (QC ID=41293)	R201202-03			0.43	0.500			89		102				03/19/02	03/19	SS-021
LCS (QC ID=41292)	R201202-02			0.19	0.500			81		139				03/19/02	03/20	SS-031
Duplicate (R201202-01) (QC ID=41294)	R201202-04			0.37	0.500			82		102			54	03/19/02	03/19	SS-022
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD				
FOR 4 SAMPLES	MDA	0.31	±	0.22
	YIELD	80	±	18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test NP Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7024-033						
B12XM1	R201202-01			7217-001	U	
BLK (QC ID=41293)	R201202-03			7217-003	U	
LCS (QC ID=41292)	R201202-02			7217-002	ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Analy.						

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 7024-033	2σ prep error 5.0 %							Reference Lab Notebook 7024 pg. 033								
B12XM1	R201202-01			0.074	0.300			48		813			55	03/19/02	03/20	SS-050
BLK (QC ID=41293)	R201202-03			0.14	0.300			47		754				03/19/02	03/20	SS-032
LCS (QC ID=41292)	R201202-02			0.14	0.300			55		754				03/19/02	03/20	SS-031
Duplicate (R201202-01) (QC ID=41294)	R201202-04			0.30	0.300			31		123			56	03/19/02	03/21	SS-044
Nominal values and limits from method				1.0	0.300			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.16 ± 0.19
YIELD 45 ± 20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test PU Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7024-033								
B12XM1	R201202-01			7217-001	U		U	
BLK (QC ID=41293)	R201202-03			7217-003	U		U	
LCS (QC ID=41292)	R201202-02			7217-002	ok		ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	
PFP Well Installation Smpl. & Analy.								

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 7024-033	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 033											
B12XM1	R201202-01			0.18	0.500			73		139			54	03/18/02	03/19	SS-043
BLK (QC ID=41293)	R201202-03			0.22	0.500			65		119				03/18/02	03/18	SS-044
LCS (QC ID=41292)	R201202-02			0.19	0.500			79		119				03/18/02	03/18	SS-043
Duplicate (R201202-01) (QC ID=41294)	R201202-04			0.19	0.500			76		119			53	03/18/02	03/18	SS-045
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA 0.20 ± 0.035
FOR 4 SAMPLES	YIELD 73 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test U Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7024-033														
B12XM1	R201202-01			7217-001	U		U		U					
BLK (QC ID=41293)	R201202-03			7217-003	U		U		U					
LCS (QC ID=41292)	R201202-02			7217-002	ok		ok		ok					
Duplicate (R201202-01)	R201202-04			7217-004	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0		1.0		100		4	
PFP Well Installation Smpl. & Analy.											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 7024-033	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 033											
B12XM1	R201202-01			0.41	0.300			83		102			50	03/15/02	03/15	SS-044
BLK (QC ID=41293)	R201202-03			0.40	0.300			88		102				03/15/02	03/15	SS-048
LCS (QC ID=41292)	R201202-02			1.6	0.300			94		102				03/15/02	03/15	SS-045
Duplicate (R201202-01) (QC ID=41294)	R201202-04			0.38	0.300			102		102			50	03/15/02	03/15	SS-049
Nominal values and limits from method				1.0	0.300			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.70 ± 1.2
YIELD 92 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test SR Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7024-033						
B12XM1	R201202-01			7217-001	U	
BLK (QC ID=41293)	R201202-03			7217-003	U	
LCS (QC ID=41292)	R201202-02			7217-002	ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.0	
PFP Well Installation Smpl. & Analy.						

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 7024-033 2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 033																
B12XM1	R201202-01			0.46	0.500			84		200			50	03/15/02	03/15	GRB-204
BLK (QC ID=41293)	R201202-03			0.65	0.500			86		100				03/15/02	03/15	GRB-206
LCS (QC ID=41292)	R201202-02			0.35	0.500			83		200				03/15/02	03/15	GRB-205
Duplicate (R201202-01) (QC ID=41294)	R201202-04			0.63	0.500			88		100			50	03/15/02	03/15	GRB-207
Nominal values and limits from method				2.0	0.500					100			180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-501 Strontium in Water Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.52 ± 0.29
YIELD 85 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test TC Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7024-033						
B12XM1	R201202-01			7217-001	U	
BLK (QC ID=41293)	R201202-03			7217-003	U	
LCS (QC ID=41292)	R201202-02			7217-002	ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U
Nominal values and limits from method PFP Well Installation Smpl. & Analy.				RDLs (pCi/L)	15	

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 7024-033 2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 033																
B12XM1	R201202-01			10	0.0500			99		50			48	03/08/02	03/13	GRB-218
BLK (QC ID=41293)	R201202-03			10	0.0500			98		50				03/08/02	03/12	GRB-218
LCS (QC ID=41292)	R201202-02			12	0.0500			83		50				03/08/02	03/13	GRB-217
Duplicate (R201202-01) (QC ID=41294)	R201202-04			11	0.0500			90		50			48	03/08/02	03/13	GRB-220
Nominal values and limits from method				15	0.0500			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 11 ± 1.9
YIELD 92 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test 93A Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7024-033						
B12XM1	R201202-01	93		7217-001	U	
BLK (QC ID=41293)	R201202-03	93		7217-003	U	
LCS (QC ID=41292)	R201202-02	93		7217-002	ok	
Duplicate (R201202-01)	R201202-04	93		7217-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	3.0	
PFP Well Installation Smpl. & Analy.						

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 7024-033 2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 033																
B12XM1	R201202-01	93		1.4	0.200			53		100			47	03/12/02	03/12	GRB-101
BLK (QC ID=41293)	R201202-03	93		1.6	0.200			20		100				03/12/02	03/12	GRB-105
LCS (QC ID=41292)	R201202-02	93		1.9	0.200			22		100				03/12/02	03/13	GRB-115
Duplicate (R201202-01) (QC ID=41294)	R201202-04	93		1.7	0.200			52		100			47	03/12/02	03/12	GRB-109
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 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	1.6	±	0.42
	RESIDUE	37	±	36

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test 93B Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7024-033					
B12XM1	R201202-01	93		7217-001	7.74
BLK (QC ID=41293)	R201202-03	93		7217-003	U
LCS (QC ID=41292)	R201202-02	93		7217-002	ok
Duplicate (R201202-01)	R201202-04	93		7217-004	ok
Nominal values and limits from method				RDLs (pCi/L)	4.0
PFP Well Installation Smpl. & Analy.					

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 7024-033	2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 033															
B12XM1	R201202-01	93		2.8	0.200			53		100			47	03/12/02	03/12	GRB-101
BLK (QC ID=41293)	R201202-03	93		3.8	0.200			20		100				03/12/02	03/12	GRB-105
LCS (QC ID=41292)	R201202-02	93		3.5	0.200			22		100				03/12/02	03/13	GRB-115
Duplicate (R201202-01) (QC ID=41294)	R201202-04	93		2.9	0.200			52		100			47	03/12/02	03/12	GRB-109
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 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	3.2	±	0.96
	RESIDUE	37	±	36

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test GAM Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7024-033								
B12XM1	R201202-01			7217-001	U		U	
BLK (QC ID=41293)	R201202-03			7217-003	U		U	
LCS (QC ID=41292)	R201202-02			7217-002	ok		ok	
Duplicate (R201202-01)	R201202-04			7217-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
PFP Well Installation Smpl. & Analy.								

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 7024-033	2σ prep error 15.0 %				Reference Lab Notebook 7024 pg. 033											
B12XM1	R201202-01			53	0.500					709			48	03/13/02	03/13	01,03,00
BLK (QC ID=41293)	R201202-03			70	0.500					708				03/13/02	03/13	MB,05,00
LCS (QC ID=41292)	R201202-02			11	0.500					708				03/13/02	03/13	01,04,00
Duplicate (R201202-01) (QC ID=41294)	R201202-04			80	0.500					334			49	03/13/02	03/14	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 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 54 ± 61
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1686

Test H Matrix WATER
SDG 7217
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1686

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7024-033						
B12XM1	R201202-01			7217-001	464	
BLK (QC ID=41293)	R201202-03			7217-003	U	
LCS (QC ID=41292)	R201202-02			7217-002	ok	J
Duplicate (R201202-01)	R201202-04			7217-004	ok	
Spike (R201202-01)	R201202-05			7217-005	ok	X

Nominal values and limits from method RDLs (pCi/L) 400
PFP Well Installation Smpl. & Analy.

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 7024-033 2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 033																
B12XM1	R201202-01			190	0.0100			100		100			48	03/07/02	03/13	LSC-006
BLK (QC ID=41293)	R201202-03			19	1.00			10		100				03/07/02	03/07	LSC-006
LCS (QC ID=41292)	R201202-02			19	1.00			10		100				03/07/02	03/07	LSC-006
Duplicate (R201202-01) (QC ID=41294)	R201202-04			180	0.0100			100		100			48	03/07/02	03/13	LSC-006
Spike (R201202-01) (QC ID=41295)	R201202-05			190	0.0300			33		100			42	03/07/02	03/07	LSC-006
Nominal values and limits from method				400	0.0100					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-210 Tritium in Water Samples by Distillation, rev 5

AVERAGES ± 2 SD MDA 120 ± 180
FOR 5 SAMPLES YIELD 51 ± 92

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/22/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-09	Page 1 of 1

Collector Renee Nielson	**Company Contact** Virginia Rohay **Telephone No.** 372-9100	**Project Coordinator** TRENT, SJ	**Price Code** 7N **Data Turnaround** 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	**Sampling Location** H11686 (7217) 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-114	**Air Quality** ☐
Ice Chest No. See OSPC	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA TMA	**Offsite Property No.** A020665	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2C AT THE 3728 SHIPPING FACILITY ON 1/25/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.

RT 1.25.02

SAMPLE ANALYSIS

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

RUN 1/5/01

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM1 ✓	WATER ✓	1/24/02 ✓	2019 ✓	X ✓		X ✓						X

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson / R. Nielson	1/25/02 0305	Stored in Ref #2C	1/25/02 0305
Ref 2C	1.25.02 0800	R. Thorsen	1.25.02 0800
R. Thorsen ERC	1.25.02 0800	FEDEX	1-25-02
FED-EXPRESS	1-26-02 10AM	E. Maestas	1-26-02 10AM

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

~~(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040B~~
~~(2) ICP Metals - 6010A (TAL) (Sodium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-On) (Phosphorus)~~
~~(3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr; Isotopic Uranium

RT 1.25.02

Use B12XL3 for Shipping

Matrix *

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

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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 1-26-02 11:00

CoC No. B01-114-09

Container I.D. No. ERC-02-104 & ERC-02-009. 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: 1
7. Number of containers per sample: CHECK (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E.S. Maestas Date: 1-28-02 Time: 10:AM

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-114 H1686

RFW LOT # :0201L868

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13Y31	001	W	02LVG016	01/24/02	01/26/02	N/A	01/29/02
B12XM1	002	W	02LVG016	01/24/02	01/26/02	N/A	01/29/02
B12XM1	002 D1	W	02LVG019	01/24/02	01/26/02	N/A	01/30/02
B12XM1	002 MS	W	02LVG016	01/24/02	01/26/02	N/A	01/29/02
B12XM1	002 MSD	W	02LVG016	01/24/02	01/26/02	N/A	01/29/02
LAB QC:							
VBLKIP	MB1	W	02LVG016	N/A	N/A	N/A	01/29/02
VBLKIP	MB1 BS	W	02LVG016	N/A	N/A	N/A	01/29/02
VBLKIQ	MB1	W	02LVG019	N/A	N/A	N/A	01/30/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-114
LVL #: 0201L868
SDG/SAF #: H1686/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 01-26-2002

GC/MS VOLATILE

Two (2) water samples were collected on 01-24-2002.

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 client specified Volatile target compounds on 01-29,30-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of cooler temperatures, which have been recorded on the chain of custody.

2. The analysis holding time was met.

3. Non-target compounds were not detected in the samples.

4. Sample B12XM1 required a 5-fold dilution due to high levels of target compounds.

5. All surrogate recoveries were within EPA QC limits.

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

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

8. The method blank 02LVG019-MB1 contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.

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

10. The levels of Chloroform and Carbon Tetrachloride exceeded the calibration range in sample B12XM1 and its associated matrix spike samples. The sample B12XM1 was diluted and reported but the matrix spike samples were not; consequently, the over the calibration results for the matrix spike samples were flagged 'E' and reported.

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

02-04-02
Date

som\group\data\voa\tnu-hanford\0201-868.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 1 2 pages.

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

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.

VLI
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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.

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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.

Volatiles By GC/MS, Special List

Report Date: 02/01/02 12:27

RFW Batch Number: **0201L868** Client: **TNUHANFORD B01-114 H1686** Work Order: 11343606001 Page: 1a

	Cust ID:	B13Y31	B12XM1	B12XM1	B12XM1	B12XM1	VBLKIP
Sample Information	RFW#:	001	002	002 DL	002 MS	002 MSD	02LVG016-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	5.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Toluene-d8	99 %	98 %	97 %	95 %	92 %	100 %
	Bromofluorobenzene	108 %	110 %	101 %	105 %	104 %	109 %
	1,2-Dichloroethane-d4	112 %	114 %	103 %	116 %	122 %	100 %
Chloromethane		10 U	10 U	50 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	50 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	50 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	50 U	10 U	10 U	10 U
Methylene Chloride		5 J	4 J	24 JBD	6	4 J	5 U
Acetone		10 U	13 J	17 JD	12 J	13 J	10 U
Carbon Disulfide		5 U	5 U	25 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	25 U	84 %	85 %	5 U
1,1-Dichloroethane		5 U	5 U	25 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	25 U	5 U	5 U	5 U
Chloroform		5 U	520 E	640 D	490 E	530 E	5 U
1,2-Dichloroethane		5 U	5 U	25 U	5 U	5 U	5 U
2-Butanone		10 U	16 J	50 U	17 J	16 J	10 U
1,1,1-Trichloroethane		5 U	5 U	25 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	540 E	420 D	510 E	550 E	5 U
Bromodichloromethane		5 U	5 U	25 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	25 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	25 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	25 U	100 %	104 %	5 U
Dibromochloromethane		5 U	5 U	25 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	25 U	5 U	5 U	5 U
Benzene		5 U	5 U	25 U	101 %	106 %	5 U
Trans-1,3-Dichloropropene		5 U	5 U	25 U	5 U	5 U	5 U
Bromoform		5 U	5 U	25 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	50 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	50 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	25 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	25 U	5 U	5 U	5 U
Toluene		5 U	5 U	25 U	105 %	106 %	5 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0201L868** Client: **TNUHANFORD B01-114 H1686** Work Order: 11343606001 Page: 1b

Cust ID:	B13Y31	B12XM1	B12XM1	B12XM1	B12XM1	VBLKIP
RFW#:	001	002	002 DL	002 MS	002 MSD	02LVG016-MB1
Chlorobenzene	5 U	5 U	25 U	96 %	98 %	5 U
Ethylbenzene	5 U	5 U	25 U	5 U	5 U	5 U
Styrene	5 U	5 U	25 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	25 U	5 U	5 U	5 U
N-butylbenzene	5 U	5 U	25 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 02/01/02 12:27

RFW Batch Number: 0201L868 Client: TNUHANFORD B01-114 H1686 Work Order: 11343606001 Page: 2a

	Cust ID:	VBLKIP BS		VBLKIQ	
Sample Information	RFW#:	02LVG016-MB1		02LVG019-MB1	
	Matrix:	WATER		WATER	
	D.F.:	1.00		1.00	
	Units:	ug/L		ug/L	
Surrogate Recovery	Toluene-d8	93	%	97	%
	Bromofluorobenzene	106	%	104	%
	1,2-Dichloroethane-d4	104	%	104	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		5	U	2	J
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		77	%	5	U
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		98	%	5	U
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		95	%	5	U
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U
Toluene		103	%	5	U

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKIP BS	VBLKIQ
RFW#:	02LVG016-MB1	02LVG019-MB1
Chlorobenzene	97 %	5 U
Ethylbenzene	5 U	5 U
Styrene	5 U	5 U
Xylene (total)	5 U	5 U
N-butylbenzene	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only
02-01L868
01/24/02

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

Client: TNU-Hanford B01-114
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec. Del: Std. TAT: 30day

Date Rec'd: 01/24/02 Date Due: 02/25/02

		A	B	C	D	E			F	G		H	I	J			
Refrigerator #		1	3						D	3		3	3	3			
#/Type Container	Liquid	2GL	2GL						2GL	PL		PL	PL	PL			
	Solid																
Volume	Liquid	40	1000						500	500		250	500	500			
	Solid																
Preservatives		HCL	—						H2SO4	HNO3		—	—	H2SO4			
ANALYSES REQUESTED		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb				TIC TOC	ICP Metal	CN	AKA	IC Anions	NO2/NO3			
		Lionville Laboratory Use Only															
		0624X	0625X						ITIC TOC	MET①		IALKL	IC①	IN3N2			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X				ITIC TOC	MET①		IALKL	IC①	IN3N2			
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	B13Y31			W	01/24/02	1700	3													
	002	B12XM1			L	01/24/02	2019	3	2				1	1		1	1	1			

Special Instructions: Saf # B01-114
Run Matrix QC

DATE/REVISIONS:

MET① 1. Ca, Co, Cr, Fe, Mg, Ni, Na, Zn, P
IC① 2. CL, F, NO3, NO2, PO4, SO4
ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 0, 0.6, 0.8, 0.9 C

Relinquished by	Received by	Date	Time
Fed Ex	JPerry	01/24/02	1030

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0659
4235 7955 0660
4235 7955 0648
4235 7955 0637

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-45	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020090	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-25-02

Special Handling and/or Storage

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										
Sample No.	Matrix *	Sample Date	Sample Time								
B13Y31	WATER	1/24/02	1700	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson	Date/Time: 1/25/02 0305	Received By: Stored in Ref # 2C	Date/Time: 1/25/02 0305
Relinquished By: Remuedation Ref 2C 3728	Date/Time: 1.25.02 0800	Received By: R.L. Thoren	Date/Time: 1.25.02 0800
Relinquished By: R.L. Thoren ERC	Date/Time: 1.25.02 0800	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 01/26/02 1030	Received By: Jerry	Date/Time: 01/26/02 1030
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1-25-02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1-25-02 FOR SHIPMENT.
RT 1-25-02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-09	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020090	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/26/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.

RT 1.25.02

Preservation	None	Cool 4C	HCl to pH <2	HNO3 or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	1
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM1	WATER	1/24/02	2019		X		X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in Ref #2C	1/25/02 0305
Removed from Ref 2C 3728	1/25/02 0600	R. Thorson	1.25.02 0600
R. Thorson	1.25.02 0600	FED EX	
Fed Ex	01/26/02 1030	J Perry	01/26/02 1030

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; ~~pH (Water) - 9040~~ RT 1.25.02
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr; Isotopic Uranium~~ RT 1.25.02

Use B12XL3 for Shipping

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

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

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1686

DATE RECEIVED: 01/26/02 LVL LOT # :0201L868

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XM1	002	W	02LE0089	01/24/02	01/29/02	02/06/02
B12XM1	002 MS	W	02LE0089	01/24/02	01/29/02	02/06/02
LAB QC:						
SBLKPA	MB1	W	02LE0089	N/A	01/29/02	02/06/02
SBLKPA	MB1 BS	W	02LE0089	N/A	01/29/02	02/06/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-114
LVL #: 0201L868
SDG/SAF #: H1686/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 01-26-2002

SEMIVOLATILE

One (1) water sample was collected on 01-24-2002.

The sample and its associated QC samples were extracted on 01-29-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 02-06-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of cooler temperatures, which have been recorded on the chain of custody.

2. Samples were extracted and analyzed within required holding time.

3. Non-target compounds were detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

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

6. One (1) of eleven (11) matrix spike recoveries was outside EPA QC limits.

   The acid fraction of the matrix spike sample was inadvertently combined with a different spike sample; consequently, the matrix spike sample has been cancelled. The matrix spike duplicate sample has been analyzed and reported as a matrix spike (MS). A copy of the Sample Discrepancy Reports (SDR) has been enclosed.

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

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

for J. Michael Taylor
President
Lionville Laboratory Incorporated

02-14-02
Date

som\gorup\data\bna\tnu-hanford-0201-868.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 1 4 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02EX009

Initiator: Martin Ford Batch: 0201L868 Parameter: 625
Date: 2/4/02 Samples: 002-S Matrix: H2O
Client: TNV Method: SW846/MCAWW/CLP/ Prep Batch: 02LE0089

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 X Wrong Sample ~~Pulled~~ combined __ 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)
Sample 0201L869-002-S. Base fraction was combined with 0201L868-002-S Acid fraction by mistake (this resulted in sample -002S having very little, or no surrogate and spike recovery - C.G. 02-07-02)
*NOTE still have Acid fraction for 0201L869-002-S + Base fraction for 0201L868-002-S

2. Known or Probable Causes(s) which were not combine.

Analyst error

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)

No Volume for reextract
cancel MSD, report MSD as MS
JL 2-14-02

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: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative - Included in 0201L869 Beth Rubino 2/13/01
__ 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
4	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	2	X MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

L-WI-006/E-01/01

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: CDMS025

Initiator: CLARA GOODFIELD Batch: 02011868 Parameter: 0625X
Date: 02-07-02 Samples: -0025 Matrix: H2O
Client: TMU Method: SW846/MCAWW/CLP/ Prep Batch: 02LE0089

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)

There are very little, or NO surrogate + spike Recovery for sample 0025.

2. Known or Probable Causes(s)

Please see SDR # 02EX009 for DETAILS.

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:

~~This sample was cancelled~~. MSD cancelled
MSD reported as MS
extracted MS not used
M 2-12-02 by C.G.

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: _____

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: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

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.

VLI
LIONVILLE LABORATORIES INC

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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation 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 quantitation modifications:

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

PA - Peak Assignment: quantitation 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: 02/14/02 12:18

RFW Batch Number: **0201L868** Client: **TNUHANFORD B01-114 H1686** Work Order: 11343606001 Page: 1a

	Cust ID:	B12XM1		B12XM1		SBLKPA		SBLKPA BS	
Sample Information	RFW#:	002		002 MS		02LE0089-MB1		02LE0089-MB1	
	Matrix:	WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Nitrobenzene-d5	63	%	82	%	90	%	73	%
	2-Fluorobiphenyl	69	%	83	%	82	%	72	%
	p-Terphenyl-d14	84	%	100	%	106	%	99	%
	Phenol-d5	67	%	76	%	99	%	77	%
	2-Fluorophenol	66	%	87	%	102	%	85	%
	2,4,6-Tribromophenol	81	%	104	%	103	%	94	%
Phenol		11	U	78	%	10	U	70	%
bis(2-Chloroethyl)ether		11	U	25	U	10	U	10	U
2-Chlorophenol		11	U	85	%	10	U	77	%
1,3-Dichlorobenzene		11	U	25	U	10	U	10	U
1,4-Dichlorobenzene		11	U	63	%	10	U	49	%
1,2-Dichlorobenzene		11	U	25	U	10	U	10	U
2-Methylphenol		11	U	25	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		11	U	25	U	10	U	10	U
3- and/or 4-Methylphenol		11	U	25	U	10	U	10	U
N-Nitroso-Di-n-propylamine		11	U	90	%	10	U	76	%
Hexachloroethane		11	U	25	U	10	U	10	U
Nitrobenzene		11	U	25	U	10	U	10	U
Isophorone		11	U	25	U	10	U	10	U
2-Nitrophenol		11	U	25	U	10	U	10	U
2,4-Dimethylphenol		11	U	25	U	10	U	10	U
bis(2-Chloroethoxy)methane		11	U	25	U	10	U	10	U
2,4-Dichlorophenol		11	U	25	U	10	U	10	U
1,2,4-Trichlorobenzene		11	U	69	%	10	U	53	%
Naphthalene		11	U	25	U	10	U	10	U
4-Chloroaniline		11	U	25	U	10	U	10	U
Hexachlorobutadiene		11	U	25	U	10	U	10	U
4-Chloro-3-methylphenol		11	U	81	%	10	U	76	%
2-Methylnaphthalene		11	U	25	U	10	U	10	U
Hexachlorocyclopentadiene		11	U	25	U	10	U	10	U
2,4,6-Trichlorophenol		11	U	25	U	10	U	10	U
2,4,5-Trichlorophenol		28	U	62	U	25	U	25	U

*= Outside of EPA CLP QC limits.

Cust ID:	B12XM1		B12XM1		SBLKPA		SBLKPA BS	
RFW#:	002		002 MS		02LE0089-MB1		02LE0089-MB1	
2-Chloronaphthalene	11	U	25	U	10	U	10	U
2-Nitroaniline	28	U	62	U	25	U	25	U
Dimethylphthalate	11	U	25	U	10	U	10	U
Acenaphthylene	11	U	25	U	10	U	10	U
2,6-Dinitrotoluene	11	U	25	U	10	U	10	U
3-Nitroaniline	28	U	62	U	25	U	25	U
Acenaphthene	11	U	76	%	10	U	69	%
2,4-Dinitrophenol	28	U	62	U	25	U	25	U
4-Nitrophenol	28	U	75	%	25	U	72	%
Dibenzofuran	11	U	25	U	10	U	10	U
2,4-Dinitrotoluene	11	U	89	%	10	U	84	%
Diethylphthalate	11	U	25	U	10	U	10	U
4-Chlorophenyl-phenylether	11	U	25	U	10	U	10	U
Fluorene	11	U	25	U	10	U	10	U
4-Nitroaniline	28	U	62	U	25	U	25	U
4,6-Dinitro-2-methylphenol	28	U	62	U	25	U	25	U
N-Nitrosodiphenylamine (1)	11	U	25	U	10	U	10	U
4-Bromophenyl-phenylether	11	U	25	U	10	U	10	U
Hexachlorobenzene	11	U	25	U	10	U	10	U
Pentachlorophenol	28	U	106 *	%	25	U	75	%
Phenanthrene	11	U	25	U	10	U	10	U
Anthracene	11	U	25	U	10	U	10	U
Carbazole	11	U	25	U	10	U	10	U
Di-n-Butylphthalate	0.8	J	4	J	10	U	10	U
Fluoranthene	11	U	25	U	10	U	10	U
Pyrene	11	U	89	%	10	U	89	%
Butylbenzylphthalate	11	U	25	U	10	U	10	U
3,3'-Dichlorobenzidine	11	U	25	U	10	U	10	U
Benzo(a)anthracene	11	U	25	U	10	U	10	U
Chrysene	11	U	25	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	2	J	4	J	10	U	0.8	J
Di-n-Octyl phthalate	11	U	25	U	10	U	10	U
Benzo(b)fluoranthene	11	U	25	U	10	U	10	U
Benzo(k)fluoranthene	11	U	25	U	10	U	10	U
Benzo(a)pyrene	11	U	25	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	11	U	25	U	10	U	10	U
Dibenzo(a,h)anthracene	11	U	25	U	10	U	10	U
Benzo(g,h,i)perylene	11	U	25	U	10	U	10	U
Tributylphosphate	11	U	25	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.

B12XM1

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-114 H1686

Matrix: (soil/water) WATER

Lab Sample ID: 0201L868-002

Sample wt/vol: 900 (g/mL) ML

Lab File ID: D020609

Level: (low/med) LOW

Date Received: 01/26/02

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

Date Extracted: 01/29/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/06/02

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	6.740	10	J
2.	UNKNOWN	6.959	20	J
3.	UNKNOWN	10.256	7	J
4.	UNKNOWN	10.352	4	J
5.	UNKNOWN	10.685	5	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKPA

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-114 H1686

Matrix: (soil/water) WATER

Lab Sample ID: 02LE0089-MB1

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

Lab File ID: D020607

Level: (low/med) LOW

Date Received: 01/29/02

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

Date Extracted: 01/29/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/06/02

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.				

Lionville Laboratory Use Only
0201L868
JP01/26/02

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford 801-114
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec. Del: Std. TAT: 30day
Date Rec'd: 01/26/02 Date Due: 02/25/02

		ABC	DE					F	G		H	I	J			
Refrigerator #		1	3					1	3		3	3	3			
#/Type Container	Liquid	2GL	2GL					2GL	PL		PL	PL	PL			
	Solid															
Volume	Liquid	40	1000					500	500		250	500	500			
	Solid															
Preservatives		HCL	—					H2SO4	HNO3		—	—	H2SO4			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TOC	TP Metal	CN	ALK.	IC anions	NO2/NO3			
Lionville Laboratory Use Only		0624X	0625X					ITIC IOCT	METO		IALKL	ICO	IN3N2			

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	0624X	0625X	ITIC IOCT	METO	IALKL	ICO	IN3N2
001	B13Y31			W	01/24/02	1700	3						
002	B12XM1			L	01/24/02	2019	3	2	1	1	1	1	1

Special Instructions: Saf # B01-114
Run Matrix QC

DATE/REVISIONS:
METO 1. Ca, Co, Cr, Fe, Mg, Ni, Na, Zn, P
ICO 2. Cl, F, NO3, NO2, PO4, SO4
ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 0.06, 0.8, 0.9 C

Relinquished by	Received by	Date	Time
FedEx	JPamy	01/26/02	1030

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0659
4235 7955 0660
4235 7955 0648
4235 7955 0637

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-114-43
Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	Sampling Location 200 West		SAF No. B01-114	Air Quality ☐
Ice Chest No. See OSPC	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA	Offsite Property No. A020090		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1.25.02

Special Handling and/or Storage

Preservation	HCl or H2SO4 to pH <2 Coo											
Type of Container	aGs*											
No. of Container(s)	3											
Volume	40mL											
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)											
Sample No.	Matrix *	Sample Date	Sample Time									
B13Y31	WATER	1/24/02	1700	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in Ref # 2C	1/25/02 0305
Relinquished By	Date/Time	Received By	Date/Time
Ref 2C 3728	1.25.02 0800	R.L. Thower	1.25.02 0800
Relinquished By	Date/Time	Received By	Date/Time
R.L. Thower	1.25.02 0800	FEDEX	
Relinquished By	Date/Time	Received By	Date/Time
FedEx	01/26/02 1030	Jerry	01/26/02 1030
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/25/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.
RT 1.25.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-09	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020090	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/26/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.

RT 1.25.02

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo (RJN 1/25/02)	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo (RJN 1/25/01)	HNO3 to pH	
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	P	
No. of Container(s)	1	1	1	1	1	1	1	2	3	1	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L	
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time								
B12XM1	WATER	1/24/02	2019		X		X	X	X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielsen	1/25/02 0305	Stored in Ref #2C	1/25/02 0305
Removed from Ref 2C 3728	1/25/02 0600	R. L. Thorson	1.25.02 0600
R. L. Thorson ERC	1.25.02 0600	FED EX	
Fed Ex	01/26/02 1030	J Perry	01/26/02 1030

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; ~~pH (Water) - 9040~~ RT 1.25.02
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89/90 -- Total Sr; Isotopic Uranium~~

Use B12XL3 for Shipping

RT 1.25.02

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

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

BHI-EE-011 (10/99)

RECEIVED FEB 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1686

DATE RECEIVED: 01/26/02 LVL LOT # :0201L868

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XM1						
CALCIUM, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
CALCIUM, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
CALCIUM, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
CADMIUM, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
CADMIUM, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
CADMIUM, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
CHROMIUM, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
CHROMIUM, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
CHROMIUM, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
IRON, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
IRON, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
IRON, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
MAGNESIUM, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
MAGNESIUM, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
MAGNESIUM, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
SODIUM, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
SODIUM, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
SODIUM, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
NICKEL, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
NICKEL, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
NICKEL, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
PHOSPHORUS, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
PHOSPHORUS, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
PHOSPHORUS, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02
ZINC, TOTAL	002	W	02L0035	01/24/02	01/29/02	01/29/02
ZINC, TOTAL	002 REP	W	02L0035	01/24/02	01/29/02	01/29/02
ZINC, TOTAL	002 MS	W	02L0035	01/24/02	01/29/02	01/29/02

LAB QC:

CALCIUM LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
CALCIUM, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
CADMIUM LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
CADMIUM, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
CHROMIUM LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1686

DATE RECEIVED: 01/26/02 LVL LOT # :0201L868

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
IRON LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
IRON, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
MAGNESIUM LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
MAGNESIUM, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
SODIUM LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
SODIUM, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
NICKEL LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
NICKEL, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
PHOSPHORUS LCS	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
PHOSPHORUS, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02
ZINC LABORATORY	LC1 BS	W	02L0035	N/A	01/29/02	01/29/02
ZINC, TOTAL	MB1	W	02L0035	N/A	01/29/02	01/29/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-114
LVL#: 0201L868
SDG/SAF#: H1686/B01-114

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-02

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 water sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

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

4. All results presented in this report are derived from samples that met LVLI's sample acceptance policy with the exception of cooler temperature, which has been recorded on the chain of custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of CCV1 for Phosphorous (111.3%). The sample may be bias slightly high for Phosphorous.

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 Zinc was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and the sample 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.

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 14 pages.

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

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

11. All duplicate analyses were within 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-05-02
Date

gmb/m01-868

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 6201L848

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other: Phosphorus Method: 6010B

L-WI-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B12XM1	Calcium, Total	57800	UG/L	10.3	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.80 u	UG/L	0.80	1.0
		Iron, Total	148	UG/L	15.0	1.0
		Magnesium, Total	19800	UG/L	9.2	1.0
		Sodium, Total	22500	UG/L	5.8	1.0
		Nickel, Total	4.0	UG/L	1.2	1.0
		Phosphorus, Total	56.3	UG/L	20.0	1.0
		Zinc, Total	2.4	UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/05/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0035-MB1	Calcium, Total	27.7		UG/L	10.3	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	15.0	u	UG/L	15.0	1.0
		Magnesium, Total	17.2		UG/L	9.2	1.0
		Sodium, Total	88.2		UG/L	5.8	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Phosphorus, Total	20.0	u	UG/L	20.0	1.0
		Zinc, Total	1.9		UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B12XM1	Calcium, Total	83700	57800	25000	103.5	1.0
		Cadmium, Total	50.0	0.30u	50.0	100	1.0
		Chromium, Total	201	0.80u	200	100.6	1.0
		Iron, Total	1150	148	1000	100.4	1.0
		Magnesium, Total	45100	19800	25000	101.4	1.0
		Sodium, Total	45900	22500	25000	93.6	1.0
		Nickel, Total	502	4.0	500	99.6	1.0
		Phosphorus, Total	5200	56.3	5000	103.0	1.0
		Zinc, Total	503	2.4	500	100.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B12XM1	Calcium, Total	57800	56500	2.3	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.80u	0.80u	NC	1.0
		Iron, Total	148	146	1.1	1.0
		Magnesium, Total	19800	19300	2.4	1.0
		Sodium, Total	22500	21800	3.0	1.0
		Nickel, Total	4.0	3.8	5.1	1.0
		Phosphorus, Total	56.3	64.2	13.1	1.0
		Zinc, Total	2.4	2.4	0.00	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0035-LC1	Calcium, LCS	24100	25000	UG/L	96.5
		Cadmium, LCS	245	250	UG/L	98.1
		Chromium, LCS	487	500	UG/L	97.5
		Iron, LCS	4910	5000	UG/L	98.2
		Magnesium, LCS	24600	25000	UG/L	98.3
		Sodium, LCS	23500	25000	UG/L	94.2
		Nickel, LCS	1940	2000	UG/L	97.1
		Phosphorus, LCS	4900	5000	UG/L	98.0
		Zinc, LCS	978	1000	UG/L	97.8

Lionville Laboratory Use Only
02-01L868
Spec 1/26/02

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc

Client: TNU-Hanford B01-114
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec. Del: Std. TAT: 30day
Date Rec'd: 01/26/02 Date Due: 02/25/02

		A	B	C	D	E				F	G		H	I	J			
Refrigerator #		1			3					3	3		3	3	3			
#/Type Container	Liquid	0GL			0GL					0GL	PL		PL	PL	PL			
	Solid																	
Volume	Liquid	40			1000					500	500		250	500	500			
	Solid																	
Preservatives		HCL			—					H_2SO_4	HNO_3		—	—	H_2SO_4			
ANALYSES REQUESTED		ORGANIC									INORG							
		VOA	BNA	Pest/PCB	Herb					TTC TOC	ICP Metal	CN	AKA	IC anions	NO_2/NO_3			
Lionville Laboratory Use Only		0624X	0625X							ITTC ICOT	MET①		IALKL	IC①	IN3N2			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil	001	B13Y31			W	01/24/02	1700	3												
SE - Sediment	002	B12XM1			L	01/24/02	2019	3	2				1	1		1	1	1		
SO - Solid																				
SL - Sludge																				
W - Water																				
O - Oil																				
A - Air																				
DS - Drum Solids																				
DL - Drum Liquids																				
L - EP/TCLP Leachate																				
Wt - Wipe																				
X - Other																				
F - Fish																				

Special Instructions: Saf # B01-114
Run Matrix QC

DATE/REVISIONS:
MET① 1. Ca, Co, Cr, Fe, Mg, Ni, Na, Zn, P
IC① 2. Cl, F, NO3, NO2, PO4, SO4
ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N
Cooler Temp. 0.2, 0.6, 0.8, 0.9 °C

Relinquished by	Received by	Date	Time
Fed Ex	JPony	01/26/02	1030

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0659
4235 7955 0660
4235 7955 0648
4235 7955 0637

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-114-43
Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020090	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-25-02

Special Handling and/or Storage

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B13Y31	WATER	1/24/02	1700	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in Ref # 2C	1/25/02 0305
Removed from Ref 2C 3728	1.25.02 0600	R. L. Thorer	1.25.02 0600
R. L. Thorer ERC	1.25.02 0600	FEDEX	
FedEx	01/24/02 1030	Terry	01/24/02 1030

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/25/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.
RT 1-25-02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-09	Page 1 of 1

Collector Renee Nielson	**Company Contact** Virginia Rohay **Telephone No.** 372-9100	**Project Coordinator** TRENT, SJ	**Price Code** 7N **Data Turnaround** 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	**Sampling Location** 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-114	**Air Quality** ☐
Ice Chest No. See OSPC	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA	**Offsite Property No.** A020090	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/26/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.

RT 1.25.02

SAMPLE ANALYSIS

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	1
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B12XM1	WATER	1/24/02	2019		X		X	X	X	X	X	X	

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in REF #2C	1/25/02 0305
Removed from Ref 2C 3728	1/25/02 0600	R. L. R Thorn	1.25.02 0600
R. L. R Thorn ERC	1.25.02 0600	FEDEX	
FedEx	01/26/02 1030	J Perry	01/26/02 1030

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for *Nitrate Method* 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

RT 1.25.02

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); ~~pH (Water) 9040~~
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89/90 - Total Sr; Isotopic Uranium~~

RT 1.25.02

use B12XL3 for shipping

Matrix *

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

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

BHI-EE-011 (10/99)

RECEIVED
FEB 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1686

DATE RECEIVED: 01/26/02 LVL LOT # :0201L868

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B12XM1							
ALKALINITY	002	W	02LAKA05	01/24/02	01/30/02	01/30/02	
ALKALINITY	002 REP	W	02LAKA05	01/24/02	01/30/02	01/30/02	
CHLORIDE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	
CHLORIDE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	
CHLORIDE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	
FLUORIDE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	
FLUORIDE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	
FLUORIDE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	
NITRITE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	15:00
NITRITE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	15:10
NITRITE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	15:20
NITRATE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	15:41
NITRATE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	15:51
NITRATE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	16:01
PHOSPHATE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	14:29
PHOSPHATE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	14:39
PHOSPHATE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	14:49
SULFATE BY IC	002	W	02LIC011	01/24/02	02/01/02	02/01/02	
SULFATE BY IC	002 REP	W	02LIC011	01/24/02	02/01/02	02/01/02	
SULFATE BY IC	002 MS	W	02LIC011	01/24/02	02/01/02	02/01/02	
NITRATE NITRITE	002	W	02LN3B08	01/24/02	01/29/02	01/29/02	
NITRATE NITRITE	002 REP	W	02LN3B08	01/24/02	01/29/02	01/29/02	
NITRATE NITRITE	002 MS	W	02LN3B08	01/24/02	01/29/02	01/29/02	
TOTAL ORGANIC CARBON	002	W	02LTC009	01/24/02	02/12/02	02/12/02	
TOTAL ORGANIC CARBON	002 REP	W	02LTC009	01/24/02	02/12/02	02/12/02	
TOTAL ORGANIC CARBON	002 MS	W	02LTC009	01/24/02	02/12/02	02/12/02	
TOTAL INORGANIC CARB	002	W	02LTCA11	01/24/02	02/19/02	02/19/02	
TOTAL INORGANIC CARB	002 REP	W	02LTCA11	01/24/02	02/19/02	02/19/02	

LAB QC:

ALKALINITY	MB1	W	02LAKA05	N/A	01/30/02	01/30/02
ALKALINITY	MB1 BS	W	02LAKA05	N/A	01/30/02	01/30/02
ALKALINITY	MB1 BSD	W	02LAKA05	N/A	01/30/02	01/30/02
CHLORIDE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1686

DATE RECEIVED: 01/26/02 LVL LOT # :0201L868

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
FLUORIDE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02
FLUORIDE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
NITRITE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02
NITRITE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
NITRATE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02
NITRATE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
PHOSPHATE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02
PHOSPHATE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
SULFATE BY IC	MB1	W	02LIC011	N/A	02/01/02	02/01/02
SULFATE BY IC	MB1 BS	W	02LIC011	N/A	02/01/02	02/01/02
NITRATE NITRITE	MB1	W	02LN3B08	N/A	01/29/02	01/29/02
NITRATE NITRITE	MB1 BS	W	02LN3B08	N/A	01/29/02	01/29/02
TOTAL ORGANIC CARBON	MB1	W	02LTC009	N/A	02/12/02	02/12/02
TOTAL ORGANIC CARBON	MB1 BS	W	02LTC009	N/A	02/12/02	02/12/02
TOTAL INORGANIC CARB	MB1	W	02LTCA11	N/A	02/19/02	02/19/02
TOTAL INORGANIC CARB	MB1 BS	W	02LTCA11	N/A	02/19/02	02/19/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-114 H1686
LVL#: 0201L868

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-02

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of the cooler temperatures that were recorded on the chain of custody.

4. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite and Phosphate (see sample chronology summary for analysis times).

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 Alkalinity was within the 20% Relative Percent Difference (RPD) control limit.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-20-02
Date

njp\i01-868

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 14 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	✓ 305.1		
✓ Alkalinity ___Bicarbonate ___Carbonate	✓ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
___Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ 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:**

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/20/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B12XM1	Alkalinity	104	MG/L	2.0	1.0
		Chloride by IC	16.4	MG/L	1.2	5.0
		Fluoride by IC	0.48	MG/L	0.25	1.0
		Nitrite by IC	1.25 u	MG/L	1.25	5.0
		Nitrate by IC	117	MG/L	5.00	20.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	44.1	MG/L	1.2	5.0
		Nitrate Nitrite	29.3	MG/L	1.0	50.0
		Total Organic Carbon	3.2	MG/L	0.50	1.0
		Total Inorganic Carbon	16.1	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/20/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LAKA05-MB1	Alkalinity	0.50 u	MG/L	0.50	1.0
BLANK10	02LIC011-MB1	~~Bromide by IC~~	~~0.25 u~~	~~MG/L~~	~~0.25~~	~~1.0~~
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	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	02LN3B08-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	02LTC009-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	02LTCA11-MB1	Total Inorganic Carbon	0.50 u	MG/L	0.50	1.0

jsp 2-20-02 not necessary

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/20/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B12XM1	Chloride by IC	41.6	16.4	25.0	101.0	5.0
		Fluoride by IC	5.6	0.48	5.0	101.7	1.0
		Nitrite by IC	25.1	1.25u	25.0	100.3	5.0
		Nitrate by IC	360	117	250	97.1	50.0
		Phosphate by IC	5.2	0.25u	5.0	104.9	1.0
		Sulfate by IC	92.3	44.1	50.0	96.5	10.0
		Nitrate Nitrite	79.7	29.3	50.0	100.8	100
		Total Organic Carbon	8.1	3.2	5.0	97.5	1.0
BLANK10	02LAKA05-MB1	Alkalinity	100	0.50u	100	100.5	1.0
		Alkalinity MSD	101	0.50u	100	101.0	1.0
BLANK10	02LIC011-MB1	~~Bromide by IC~~	~~4.7~~	~~0.25u~~	~~5.0~~	~~94.2~~	~~1.0~~
		Chloride by IC	4.7	0.25u	5.0	94.9	1.0
		Fluoride by IC	10.1	0.25u	10.0	101.4	1.0
		Nitrite by IC	4.71	0.25u	5.00	94.1	1.0
		Nitrate by IC	4.86	0.25u	5.00	97.3	1.0
		Phosphate by IC	5.2	0.25u	5.0	103.3	1.0
		Sulfate by IC	4.8	0.25u	5.0	95.5	1.0
BLANK10	02LN3B08-MB1	Nitrate Nitrite	0.50	0.02u	0.50	100.6	1.0
BLANK10	02LTC009-MB1	Total Organic Carbon	4.8	0.50u	5.0	96.4	1.0
BLANK10	02LTCA11-MB1	Total Inorganic Carbon	5.0	0.50u	5.0	100.2	1.0

2-20-02 not necessary

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 02/20/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L068

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	02LAKA05-MB1	Alkalinity	100.5	101.0	0.50

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/20/02

CLIENT: TNUHANFORD B01-114 H1686 LVL LOT #: 0201L868

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B12XM1	Alkalinity	104	102	1.9	1.0
		Chloride by IC	16.4	17.6	7.4	5.0
		Fluoride by IC	0.48	0.49	2.3	1.0
		Nitrite by IC	1.25u	1.25u	NC	5.0
		Nitrate by IC	117	116	0.54	20.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	44.1	43.7	0.89	5.0
		Nitrate Nitrite	29.3	29.2	0.17	50.0
		Total Organic Carbon	3.2	3.2	1.1	1.0
		Total Inorganic Carbon	16.1	15.2	5.9	1.0

Lionville Laboratory Use Only
0201L868
TP01/26/02

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-114
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec. Del: Std. TAT: 30day
Date Rec'd: 01/26/02 Date Due: 02/25/02

		A,B,C	D,E					F	G		H	I	J			
Refrigerator #		1	3					D	3		3	3	3			
#/Type Container	Liquid	2GL	2GL					2GL	PL		PL	PL	PL			
	Solid															
Volume	Liquid	40	1000					500	500		250	500	500			
	Solid															
Preservatives		HCL	—					H2SO4	HNO3		—	—	H2SO4			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TOC	ICP Metal	CN	ALKA.	IC anions	NO2/NO3			
		Lionville Laboratory Use Only														
		0624X	0625X					ITIC IOCT	MET①		IALKL	IC①	IN3N2			

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	0624X	0625X				ITIC IOCT	MET①		IALKL	IC①	IN3N2			
001	B13Y31			W	01/24/02	1700	3													
002	B12XM1			L	01/24/02	2019	3	2				1	1		1	1	1			

Special Instructions: Saf # B01-114
Run Matrix QC

DATE/REVISIONS:
MET① 1. Ca, Co, Cr, Fe, Mg, Ni, Na, Zn, P
IC① 2. Cl, F, NO3, NO2, PO4, SO4
ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
3.
4.
5.
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 0.06, 0.8, 0.9 C

Relinquished by	Received by	Date	Time
FedEx	JPamy	01/24/02	1030

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0659
4235 7955 0660
4235 7955 0648
4235 7955 0637

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		
Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020090	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1.25.02

Special Handling and/or Storage

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B13Y31	WATER	1/24/02	1700	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in Ref # 2C	1/25/02 0305
Removed from Ref 2C 3728	1.25.02 0800	R.L. Thorey	1.25.02 0800
R.L. Thorey ERR	1.25.02 0800	FEDEX	
FedEx	01/26/02 1030	Jerry	01/26/02 1030

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1 25 02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1 25 02 FOR SHIPMENT.
RT 1.25.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-09	Page 1 of 1

Collector Renee Nielson	**Company Contact** Virginia Rohay **Telephone No.** 372-9100	**Project Coordinator** TRENT, SJ	**Price Code** 7N **Data Turnaround** 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	**Sampling Location** 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-114	**Air Quality** ☐
Ice Chest No. See OSPC	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA RECLA	**Offsite Property No.** A020090	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/26/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/25/02 FOR SHIPMENT.

RT 1.25.02

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	1
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM1	WATER	1/24/02	2019		X		X	X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/25/02 0305	Stored in Ref #2C	1/25/02 0305
Removed from Ref 2C 3728	1/25/02 0800	R. L. R Thorn	1.25.02 0800
R. L. R Thorn ERC	1.25.02 0800	FEDEX	
FedEx	01/24/02 1030	J Perry	01/24/02 1030

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; ~~pH (Water) - 9040~~ RT 1.25.02
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~ RT 1.25.02

Use B12XL3 for Shipping

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

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

BHI-EE-011 (10/99)

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Figure 1. Sample Check-in List

.e/Time Received: 01/26/02 1030

'G#: 02012868

ork Order Number: _____ SAF# B01-114

ipping Container ID: ERC-02-003, ERC-99-032, ~~ERC-02-101~~, ERC-02-008 ? SMC421

Chain of Custody # B01-114-45, B01-114-09

. Custody Seals on shipping container intact? Yes [✓] No [ ]

.. Custody Seals dated and signed? Yes [✓] No [ ]

3. Chain-of-Custody record present? Yes [✓] No [ ]

4. Cooler temperature 0, 0, 0.6, 0.8, 0.9 °C

5. Vermiculite/packing materials is Wet [ ] Dry [✓]

6. Number of samples in shipping container: 2 (13 bottles) - amongst 5 coolers

7. Sample holding times exceeded? 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? NO Yes [ ] No [✓]

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: JPerry LVII Date: 01/26/02

Telephoned to: _____ On _____ By _____