0062467

SAF-B03-018
ERDF Groundwater Well Samples
FINAL DATA PACKAGE

E:MAIL RESULTS TO:

Tom Lazarski N/A
INITIAL/DATE

MAIL COMPLETE COPY OF DATA PACKAGE TO:

Tom Lazarski H9-03 6-2-04
INITIAL/DATE

Rich Weiss H9-01 6-2-04
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG H2534 SAF-B03-018

Rad only Chem only X Rad & Chem

X Complete Partial

RECEIVED
AUG 17 2004
EDMC

LIONVILLE LABORATORY INC.

20 May 2004

Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0403L123
SDG #	H2534
SAF #	B03-018
Date Received	3-24-04
# Samples	9
Matrix	Water
Volatiles	X
Semivolatiles	
Pest/PCB	
PAH	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager
r:\group\pm\orlette\tmu-hanford\data\b_ltrs.doc

RECEIVED MAY 2004

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

RECEIVED
MAY 2004

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04

LVL LOT # :0403L123

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B18KR1	002	W	04LVX075	03/18/04	N/A	03/26/04
B18PL1	003	W	04LVX075	03/18/04	N/A	03/26/04
B18KP7	005	W	04LVX075	03/18/04	N/A	03/26/04
B18PL2	006	W	04LVX075	03/18/04	N/A	03/26/04
B18KP9	008	W	04LVX075	03/19/04	N/A	03/26/04
B18KP9	008 MS	W	04LVX075	03/19/04	N/A	03/26/04
B18KP9	008 MSD	W	04LVX075	03/19/04	N/A	03/26/04
B18PL3	009	W	04LVX075	03/19/04	N/A	03/26/04

LAB QC:

VBLKAO	MB1	W	04LVX075	N/A	N/A	03/26/04
VBLKAO	MB1 BS	W	04LVX075	N/A	N/A	03/26/04

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B03-018
LVL #: 0403L123
SDG/SAF # H2534/B03-018

W.O. #: 11343-606-001-9999-00
Date Received: 03-24-2004

GC/MS VOLATILE

Six (6) water samples were collected on 03-18,19-2004.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 03-26-2004.

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.
2. All samples were analyzed within holding time.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
President
Lionville Laboratory Incorporated

04-15-04
Date

som\group\data\voa\tnu-hanford\0403-123.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 2 0 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY

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 closes internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

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 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 resolve 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 - **Co-elution/ Background:** Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.

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

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 04/05/04 14:23

RFW Batch Number: 0403L123 Client: TNUHANFORD B03-018 H2534 Work Order: 11343606001 Page: 1a

	Cust ID:	B18KR1		B18PL1		B18KP7		B18PL2		B18KP9		B18KP9	
Sample Information	RFW#:	002		003		005		006		008		008 MS	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	105	%	108	%	101	%	104	%	102	%	98	%
	Bromofluorobenzene	97	%	104	%	96	%	94	%	91	%	93	%
	1,2-Dichloroethane-d4	93	%	101	%	96	%	97	%	93	%	100	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		7	B	8	B	5	B	4	JB	5	JB	8	B
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	5	U	5	U	97	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		1	J	5	U	1	J	5	U	1	J	1	J
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		8		5	U	1	J	5	U	6		5	
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	5	U	5	U	95	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	5	U	5	U	104	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	5	U	5	U	99	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0403L123 Client: TNUHANFORD B03-018 H2534 Work Order: 11343606001 Page: 1b

Cust ID:	B18KR1	B18PL1	B18KP7	B18PL2	B18KP9	B18KP9
RFW#:	002	003	005	006	008	008 MS
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	95 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List

Report Date: 04/05/04 14:23

RFW Batch Number: 0403L123 Client: TNUHANFORD B03-018 H2534 Work Order: 11343606001 Page: 2a

	Cust ID:	B18KP9		B18PL3		VBLKAO		VBLKAO BS	
Sample Information	RFW#:	008 MSD		009		04LVX075-MB1		04LVX075-MB1	
	Matrix:	WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	98	%	99	%	93	%	98	%
	Bromofluorobenzene	96	%	91	%	89	%	96	%
	1,2-Dichloroethane-d4	102	%	95	%	86	%	91	%
Chloromethane		10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U
Methylene Chloride		9	B	7	B	2	J	3	JB
Acetone		10	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U
1,1-Dichloroethene		95	%	5	U	5	U	97	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U
Chloroform		1	J	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U
Carbon Tetrachloride		5		5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U
Trichloroethene		95	%	5	U	5	U	93	%
Dibromochloromethane		5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U
Benzene		104	%	5	U	5	U	96	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U
Toluene		99	%	5	U	5	U	99	%

*= Outside of EPA CLP QC limits.

Cust ID:	B18KP9	B18PL3	VBLKAO	VBLKAO BS
RFW#:	008 MSD	009	04LVX075-MB1	04LVX075-MB1
Chlorobenzene	98 %	5 U	5 U	98 %
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

0403L123

Custody Transfer Record/Lab Work Request

Page 1 of 1

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~Ecology~~ TNU Hanford SAF# B03018

Est. Final Proj. Sampling Date TNU Hanford B03-018

Project # 11343-006-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager O Johnson

QC Spec Del Std TAT 30 Days

Date Rec'd 3/24/04 Date Due 4/23/04

		A						J	D		E	F	G		H	I
Refrigerator #		1						3	3		3	3	3		3	3
#/Type Container	Liquid	3AG						1PL	1PL		1PL	1PL	1PL	1	1PL	1AG
	Solid															
Volume	Liquid	40						500	500		500	500	500	1	250	500
	Solid															
Preservatives		HCl						HNO3	HNO3		H2SO4	—	—	1	—	H2SO4
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			Soluble metals	INORG: Total Metal	CN	NO2 NO3	TDS	IC Anions	1	Al K	TOC

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	06244						METOSO	METO		IN3N3	ITDS	ICCL, ICFL, ICNO3, ICNO2, ICSO4, ICPO4	IALL	ITOX
S - Soil	001	B18KR0			W	3/18/04	0859							1	✓ JP 3/24/04						
SE - Sediment	002	KR1					1	3							1		1	1	1	✓	1	1
SO - Solid	003	PL1					0730	3													
SL - Sludge	004	KP6					1039							1	✓ JP 3/24/04						
W - Water	005	KP7					1	3							1		1	1	1	✓	1	1
O - Oil	006	PL2				3-18-04	0730	3													
A - Air	007	KP8				3-19-04	1149							1	✓ JP 3/24/04						
DS - Drum Solids	008	KP9				1	1	3							1		1	1	1	✓	1	1
DL - Drum Liquids	009	PL3			1	3-19-04	0800	3													
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Lionville Laboratory Use Only

Special Instructions:

SAF# B03-018 (per client)

Run Matrix QC

METO = As, Ba, Cr, Pb, Se, Sn, V

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # See
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. ___ °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
[signature]	[signature]	3/24/04	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE"	ORIGINAL REWRITTEN		

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~I04-028~~ B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DJS-SAWS-1480	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR0 (F)		W	3-18-04	0859	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KR1		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KR1		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KR1		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KR1		W			1x20-mL P	Activity Scan	None
B18KR1		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KR1		W			1x125-mL P	Carbon-14	None
B18KR1		W			4x1000-mL P	Iodine-129	None
B18KR1		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KR1		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	Fed EX	3/19/4 1030
Fedex	3/19/4 10[illegible]		3/19/7 1030
Fed Sam	3/23/04 2:15 pm	Fed Ex	
Fed Ex	3-24-04 1000	Victor Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

SAF No. ~~104-028~~ B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR1		W	3-18-04	0859	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KR1		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KR1		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. P. CONNOLLY			MAR 18 2004 1400	Fed Ex			3/19/4 1030
Fedex			3/19/4 10				3/19/4 10
				Fed Ex			
			3/23/04 2:15 pm				
Fed Ex			3-24-04 1000				3-24-04 1000

Matrix *

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

FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-5

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-HPO	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905 8342 0478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL1		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL1		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			1400 3-18-04	Fed Ex			1030 3/19/4
Relinquished By: Fedex			Date/Time 3/19/4	Received By			Date/Time 1030 3/19/4
Relinquished By: Fred Bowen			Date/Time 3/23/04 2:15pm	Received By: Fed Ex			Date/Time
Relinquished By: Fed Ex			Date/Time 3-24-04 1000	Received By: Victor Hernandez			Date/Time 3-24-04 1000

Matrix *

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

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

Disposed By Date/Time

Mar 18 04 11:36a DSTBS - EC&RA (509) 376 2210 P.3

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

~~104-028~~-1

Collector: D.P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ PA 7-604 1303018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H 80	Ice Chest No.: SMK 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP6 (F)		W	3-18-04	1031	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP7		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP7		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP7		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP7		W			1x20-mL P	Activity Scan	None
B18KP7		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP7		W			1x125-mL P	Carbon-14	None
B18KP7		W			4x1000-mL P	Iodine-129	None
B18KP7		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP7		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D.P. CONNOLLY	MAR 18 2004 1400	Fed Ex	3/22/4 3 pm
Fedex	3/22/4 3 pm		3/22/4 3 pm
	3/23/04 2:15 PM		
	3-24-04 1000	Victor Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I04-028-1

SAF No. ~~I04-028~~ RST-B-04 B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP7		W	3-18-04	1079	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP7		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KP7		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. P. CONNOLLY			MAR 18 2004 1400	Fed Ex	P. Stewart		3/22/4
Relinquished By			3/22/4	Received By			3/22/4
Relinquished By			3/23/04 2:15 pm	Received By		Fed Ex	
Relinquished By			3-24-04 1000	Received By	Victor Hernandez		3-24-04 1000

Matrix *

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

FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

MLM 3/23/04 ~~104-028~~

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056	MSIN: FAX: I04-028
SAF No.: ~~104-028~~ B03-018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code:	
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SMC 137	Temp.:
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905-8342-0490	
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.:	

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL2		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL2		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			3-18-04 1400	Fed Ex	P. LINTCHOVSKI		3/22/4 3:00
Relinquished By			Date/Time	Received By			Date/Time
Fedex			3/22/4 3				3/22/4
Relinquished By			Date/Time	Received By			Date/Time
			3/23/04 2:15PM	Fed Ex			
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-2

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN: FAX:
SAF No.: 3-19-04 B03018 ~~I04-028~~	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code:
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SAWS-125 Temp.:
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7900 9299-3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.:

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP8 (F)		W	3-19-04	1149	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP9		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP9		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP9		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP9		W			1x20-mL P	Activity Scan	None
B18KP9		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP9		W			1x125-mL P	Carbon-14	None
B18KP9		W			4x1000-mL P	Iodine-129	None
B18KP9		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP9		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 19 2004 1300	Fed Ex Pavlin Incubator	3/22/4
Fedex	3/22/4		3/22/4
	3/23/04 2:15pm	Fed Ex	
Fed Ex	3-24-04 1000	V. Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-2

SAF No. 3-19-04 ~~I04-028~~ I03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP9		W	3-19-04	1149	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP9		W			1x500-mL P	TDS - 160.1	Cool 4C
B18KP9		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

3-19-04

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		1300 MAR 19 2004	Fed Ex	P. Mcfadden		3/22/4
Fedex			3/22/4 12				3/22/4 12
Fed Ex			3/23/04 2:15pm	Fed Ex			
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-7

Collector D. P. CONNOLLY	Contact/Requester DL STEWART	Telephone No. 509-376-5056 MSIN FAX
SAF No. ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF MARCH 2004	Logbook No. DTS - SAWS - H80	Ice Chest No. SML-125 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 7906 9299-3445
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL3		W	3-19-04	0800	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL3		W	1	1	1x20-mL P	Activity Scan	None
					3-19-04		

Relinquished By	Date/Time	Received By	Date/Time
D.P. CONNOLLY (Print) (Sign)	MAR 19 2004 1300	Fed Ex P. Pucharc (Print) (Sign)	3/24/4
Fedex	3/22/4 12	(Sign)	3/22/4 12
(Sign)	3/23/04 2:15 pm	(Sign)	
(Sign)	3/24/04 1000	J. Hernandez	3-24-04 1000

Matrix *

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

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

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Eberline **Date:** 3/24/04

Purchase Order / Project# /
SAF# / SOW# / Release #: SDG H2534 B03018

LvLI Batch # : 04031123 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7905 8835 4340 4339	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 2° 3	°C	Cooler #	SML125 SML 137
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes	☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☑ No	☐ N/A	Head Space
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B

RECEIVED
MAY 2004

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B18KR0						
ARSENIC, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
ARSENIC, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
ARSENIC, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
BARIUM, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
BARIUM, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
BARIUM, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, SOLUBLE	001	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, SOLUBLE	001 REP	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, SOLUBLE	001 MS	W	04L0234	03/18/04	04/07/04	04/08/04
B18KR1						
ARSENIC, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
BARIUM, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, TOTAL	002	W	04L0234	03/18/04	04/07/04	04/08/04
B18KP6						
ARSENIC, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, SOLUBLE	004	W	04L0234	03/18/04	04/07/04	04/08/04
B18KP7						
ARSENIC, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
BARIUM, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
CHROMIUM, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
LEAD, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
SELENIUM, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
TIN, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
VANADIUM, TOTAL	005	W	04L0234	03/18/04	04/07/04	04/08/04
B18KP8						
ARSENIC, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
BARIUM, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
CHROMIUM, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
LEAD, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
SELENIUM, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
TIN, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
VANADIUM, SOLUBLE	007	W	04L0234	03/19/04	04/07/04	04/08/04
B18KP9						
ARSENIC, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
BARIUM, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
CHROMIUM, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
LEAD, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
SELENIUM, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
TIN, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04
VANADIUM, TOTAL	008	W	04L0234	03/19/04	04/07/04	04/08/04

LAB QC:

ARSENIC LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
BARIUM LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
BARIUM, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
CHROMIUM LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
CHROMIUM, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
LEAD LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
LEAD, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
SELENIUM LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
SELENIUM, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
TIN LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
TIN, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04
VANADIUM LABORATORY	LC1 BS	W	04L0234	N/A	04/07/04	04/08/04
VANADIUM, TOTAL	MB1	W	04L0234	N/A	04/07/04	04/08/04

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-018
LVL#: 0403L123
SDG/SAF#: H2534/B03-018

W.O.#: 11343-606-001-9999-00
Date Received: 03-24-04

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 water samples.

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

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

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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 24 pages.

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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

05-05-04
Date

jjw/m03-123

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0403L123

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: X3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other:_____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 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	X 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	X 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	X 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	X 6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	X 6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

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
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, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/23/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B18KR0	Arsenic, Soluble	3.4	u	UG/L	3.4	1.0
		Barium, Soluble	56.5		UG/L	0.20	1.0
		Chromium, Soluble	4.0		UG/L	0.50	1.0
		Lead, Soluble	2.0	u	UG/L	2.0	1.0
		Selenium, Soluble	7.4		UG/L	3.4	1.0
		Tin, Soluble	3.6	u	UG/L	3.6	1.0
		Vanadium, Soluble	24.6		UG/L	0.50	1.0
-002	B18KR1	Arsenic, Total	3.4	u	UG/L	3.4	1.0
		Barium, Total	60.4		UG/L	0.20	1.0
		Chromium, Total	29.2		UG/L	0.50	1.0
		Lead, Total	2.0	u	UG/L	2.0	1.0
		Selenium, Total	6.1		UG/L	3.4	1.0
		Tin, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	26.8		UG/L	0.50	1.0
-004	B18KP6	Arsenic, Soluble	3.4	u	UG/L	3.4	1.0
		Barium, Soluble	38.9		UG/L	0.20	1.0
		Chromium, Soluble	16.6		UG/L	0.50	1.0
		Lead, Soluble	2.0	u	UG/L	2.0	1.0
		Selenium, Soluble	4.2		UG/L	3.4	1.0
		Tin, Soluble	3.6	u	UG/L	3.6	1.0
		Vanadium, Soluble	26.8		UG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/23/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B18KP7	Arsenic, Total	3.6		UG/L	3.4	1.0
		Barium, Total	39.0		UG/L	0.20	1.0
		Chromium, Total	16.6		UG/L	0.50	1.0
		Lead, Total	2.0	u	UG/L	2.0	1.0
		Selenium, Total	4.1		UG/L	3.4	1.0
		Tin, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	27.0		UG/L	0.50	1.0
-007	B18KP8	Arsenic, Soluble	3.4	u	UG/L	3.4	1.0
		Barium, Soluble	56.1		UG/L	0.20	1.0
		Chromium, Soluble	4.1		UG/L	0.50	1.0
		Lead, Soluble	2.0	u	UG/L	2.0	1.0
		Selenium, Soluble	5.6		UG/L	3.4	1.0
		Tin, Soluble	3.6	u	UG/L	3.6	1.0
		Vanadium, Soluble	24.9		UG/L	0.50	1.0
-008	B18KP9	Arsenic, Total	3.4	u	UG/L	3.4	1.0
		Barium, Total	56.9		UG/L	0.20	1.0
		Chromium, Total	5.0		UG/L	0.50	1.0
		Lead, Total	5.3		UG/L	2.0	1.0
		Selenium, Total	4.3		UG/L	3.4	1.0
		Tin, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	26.2		UG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/23/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04L0234-MB1	Arsenic, Total	3.4 u	UG/L	3.4	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Chromium, Total	0.50 u	UG/L	0.50	1.0
		Lead, Total	2.0 u	UG/L	2.0	1.0
		Selenium, Total	3.4 u	UG/L	3.4	1.0
		Tin, Total	3.6 u	UG/L	3.6	1.0
		Vanadium, Total	0.50 u	UG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/23/04

CLIENT: TNUHANFORD B03-018 H2534

LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B18KR0	Arsenic, Soluble	1860	3.4 u	2000	92.9	1.0
		Barium, Soluble	1900	56.5	2000	92.4	1.0
		Chromium, Soluble	187	4.0	200	91.5	1.0
		Lead, Soluble	458	2.0 u	500	91.6	1.0
		Selenium, Soluble	1870	7.4	2000	93.2	1.0
		Tin, Soluble	935	3.6 u	1000	93.5	1.0
		Vanadium, Soluble	476	24.6	500	90.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/23/04

CLIENT: TNUHANFORD B03-018 H2534

LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B18KR0	Arsenic, Soluble	3.4 u	3.9	~~NC~~ 20.2	1.0
		Barium, Soluble	56.5	54.9	2.9	1.0
		Chromium, Soluble	4.0	3.5	13.3	1.0
		Lead, Soluble	2.0 u	2.0 u	NC	1.0
		Selenium, Soluble	7.4	7.5	1.3	1.0
		Tin, Soluble	3.6 u	3.6 u	NC	1.0
		Vanadium, Soluble	24.6	24.0	2.5	1.0

pw 5/5/04

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/23/04

CLIENT: TNUHANFORD B03-018 H2534

LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	04L0234-LC1	Arsenic, LCS	9430	10000	UG/L	94.3
		Barium, LCS	4780	5000	UG/L	95.5
		Chromium, LCS	476	500	UG/L	95.3
		Lead, LCS	2400	2500	UG/L	95.9
		Selenium, LCS	9570	10000	UG/L	95.7
		Tin, LCS	4710	5000	UG/L	94.2
		Vanadium, LCS	2350	2500	UG/L	93.8

Lionville Laboratory Use Only

0403L123

Custody Transfer Record/Lab Work Request

Page 1 of 1

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client Fredstone Electronic SAF# B03018

Est. Final Proj. Sampling Date INU Hanford B03-018

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager O Johnson

QC Spec Del Std TAT 30 Days

Date Rec'd 3/24/04 Date Due 4/23/04

		AC						J	D		E	F	G		H	I
Refrigerator #		1						3	3		3	3	3		3	3
#/Type Container	Liquid	3AG						1PL	1PL		1PL	1PL	1PL	1	1PL	1AG
	Solid															
Volume	Liquid	40						500	500		500	500	500	1	250	500
	Solid															
Preservatives		HCL						HNO3	HNO3		H2SO4	—	—	1	—	H2SO4
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			Soluble metals	Total Metal	CN	Note NO3	TDS	IC Anions	1	Al K	TOX

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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H						MET(4)SO	MET(4)		IN3N2	ITDS	ICCL, ICAL, ICNO3, ICNO2, ICSO4, ICPO4	IALL	ITOX
001	B18KRO			W	3/18/04	0859							1	✓ JP 3/24/04						
002	KR1					⊥	3							1		1	1	1 ✓	1	1
003	PL1					0730	3													
004	KP6					1039							1	✓ JP 3/24/04						
005	KP7					⊥	3							1		1	1	1 ✓	1	1
006	PL2				3-18-04	0730	3													
007	KP8				3-19-04	1149							1	✓ JP 3/24/04						
008	KP9				⊥	⊥	3							1		1	1	1 ✓	1	1
009	PL3			⊥	3-19-04	0800	3													

Special Instructions:

SAF# B03-018 (per client)

Run Matrix QC

MET(4) = As, Ba, Cr, Pb, Se, Sn, V

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	3/24/04	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE"	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
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. ____ °C

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: I04-028 B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-1480	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): CTMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR0 (F)		W	3-18-04	0859	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KR1		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KR1		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KR1		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KR1		W			1x20-mL P	Activity Scan	None
B18KR1		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KR1		W			1x125-mL P	Carbon-14	None
B18KR1		W			4x1000-mL P	Iodine-129	None
B18KR1		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KR1		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	Fed Ex	3/19/4 1030
Fedex	3/19/4 1030		3/19/7 1030
	3/23/04 2:15 pm	Fed Ex	
Fed Ex	3-24-04 1000	Vector Hernandez	3-24-04 1000

Matrix *

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

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

NNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

AF No. ~~I04-028~~ BS 3-18-04 B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR1		W	3-18-04	0859	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KR1		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KR1		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		MAR 18 2004 1400		Fed Ex		3/19/4 1030
Relinquished By			Date/Time	Received By			Date/Time
	Fedex		3/19/4 10				3/19/4 10
Relinquished By			Date/Time	Received By			Date/Time
			3/23/04 2:15 pm		Fed Ex		
Relinquished By			Date/Time	Received By			Date/Time
	Fed Ex		3-24-04 1000				3-24-04 1000

Matrix *

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

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

PNNL SLG# H2S 04

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

104-028-5

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-HPO	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905 8342 0478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL1		W	3-19-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL1		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			3-18-04 1400	Fed Ex			3/19/4 1030
Fedex			3/19/4 10				3/19/4 1030
Fed Ex			3/23/04 2:15	Fed Ex			
Fed Ex			3-24-04 1000	Victor Hernandez			3-24-04 1000

Matrix *

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

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

NNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

104-028-1

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: 104-028 RT 7-864 B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H 80	Ice Chest No.: SMK 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
* **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP6 (F)		W	3-18-04	1039	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP7		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP7		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP7		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP7		W			1x20-mL P	Activity Scan	None
B18KP7		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP7		W			1x125-mL P	Carbon-14	None
B18KP7		W			4x1000-mL P	Iodine-129	None
B18KP7		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP7		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	Fed Ex P. Linnenbrink	3/22/4 3 pm
Fedex	3/22/4 3 pm		3/22/4
	3/23/04 2:15 PM		
Fed Ex	3-24-04 1000	Victor Hernandez	3-24-04 1000

Matrix *

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

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

NNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-1

F No.	Contact/Requestor	Telephone No.	MSIN	FAX
~~I04-028~~ B03018	DL STEWART	509-376-5056		

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
318KP7		W	3-18-04	1039	1x125-mL P	Total Uranium	HNO3 to pH <2
318KP7		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
318KP7		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		MAR 18 2004 1400		Fed Ex	P. Stewart	3/22/4 3:00 pm
Relinquished By			Date/Time	Received By			Date/Time
	Fedex		3/22/4 3:00 pm				3/22/4 3:00 pm
Relinquished By			Date/Time	Received By			Date/Time
			3/23/04 2:10 pm		~~Fed Ex~~	Fed Ex	
Relinquished By			Date/Time	Received By			Date/Time
	Fed Ex		3-24-04 1000		Victor Hernandez		3-24-04 1000

Matrix *

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

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

SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

3/23/04

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX: 9I04-028-6
SAF No.: ~~104-028~~ B03-018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code: SOW
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SMC 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905-8342-0490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL2		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL2		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			3-18-04 1400	Fed Ex	P. LINTCHOVSKI		3/22/4 3:00
Fedex			3/22/4 3:00				3/22/4
Fed Ex			3/23/04 2:15 PM	Fed Ex			
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

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

02

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I04-028-2

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: 03-19-04 ~~I04-028~~ B03010	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SAWS-125 Temp.
Shipped To (Lab): STMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7900 9299 3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP8 (F)		W	3-19-04	1149	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP9		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP9		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP9		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP9		W			1x20-mL P	Activity Scan	None
B18KP9		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP9		W			1x125-mL P	Carbon-14	None
B18KP9		W			4x1000-mL P	Iodine-129	None
B18KP9		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP9		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 19 2004 1300	Fed Ex Pauliu	3/22/4
Fedex	3/22/4		3/22/4
	3/23/04 2:15pm	Fed Ex	
Fed Ex	3-24-04 1000	V. Hernandez	3-24-04 1000

Matrix *

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

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

NL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-2

F No. 3-19-04 ~~04-028~~ B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
18KP9		W	3-19-04	1149	1x125-mL P	Total Uranium	HNO3 to pH <2
18KP9		W			1x500-mL P	TDS - 160.1	Cool 4C
18KP9		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

3-19-04

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		1300 MAR 19 2004	Fed Ex	P. Pinckney		3/22/4
Relinquished By			Date/Time	Received By			Date/Time
Fedex			3/22/4 12				3/22/4 12
Relinquished By			Date/Time	Received By			Date/Time
Fed Exp			3/23/04 2:15pm	Fed Ex			
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

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

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-7

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~I04-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS - SAWS - H80	Ice Chest No.: SML-125 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7906 9299-3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL3		W	3-19-04	0800	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL3		W	↓	↓	1x20-mL P	Activity Scan	None
					3-19-04		

Relinquished By: D. P. CONNOLLY Print Sign	Date/Time 1300 MAR 19 2004	Received By: Fed Ex Print P. Nicholas Sign	Date/Time 3/24/4
Relinquished By: Fedex	Date/Time 3/22/4 12	Received By:	Date/Time 3/22/4 12
Relinquished By: Fed Ex	Date/Time 3/23/04 2:15 PM	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time 3/24/04 1000	Received By: J. Hernandez	Date/Time 3-24-04 1000

Matrix *

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

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

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Eberline **Date:** 3/24/04

Purchase Order / Project# / SAF# / SOW# / Release #: SDG H2534 B03018

LvLI Batch # : 04031L123 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7905 8835 4340 4339	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 2° 3	°C	Cooler #	SML125 SML 137
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes	☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☑ No	☐ N/A	Head Space
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B

RECEIVED MAY 2004

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B18KR1							
ALKALINITY	002	W	04LAKA09	03/18/04	03/29/04	03/29/04	
CHLORIDE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	
FLUORIDE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	
NITRITE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	2023
NITRATE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	2037
PHOSPHATE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	2023
SULFATE BY IC	002	W	04LBC019	03/18/04	03/31/04	03/31/04	
NITRATE NITRITE	002	W	04LN3017	03/18/04	03/25/04	03/25/04	
TOTAL DISSOLVED SOLI	002	W	04LSS058	03/18/04	03/25/04	03/25/04	
TOTAL DISSOLVED SOLI	002 REP	W	04LSS058	03/18/04	03/25/04	03/25/04	
TOTAL ORGANIC HALIDE	002	W	04LX009	03/18/04	04/13/04	04/13/04	
TOTAL ORGANIC HALIDE	002 REP	W	04LX009	03/18/04	04/13/04	04/13/04	
B18KP7							
ALKALINITY	005	W	04LAKA09	03/18/04	03/29/04	03/29/04	
CHLORIDE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	
CHLORIDE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	
CHLORIDE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	
FLUORIDE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	
FLUORIDE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	
FLUORIDE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	
NITRITE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	2121
NITRITE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	2135
NITRITE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	2149
NITRATE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	2204
NITRATE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	2218
NITRATE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	2233
PHOSPHATE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	2121
PHOSPHATE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	2135
PHOSPHATE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	2149
SULFATE BY IC	005	W	04LBC019	03/18/04	03/31/04	03/31/04	
SULFATE BY IC	005 REP	W	04LBC019	03/18/04	03/31/04	03/31/04	
SULFATE BY IC	005 MS	W	04LBC019	03/18/04	03/31/04	03/31/04	
NITRATE NITRITE	005	W	04LN3017	03/18/04	03/25/04	03/25/04	

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS Time
NITRATE NITRITE	005 REP	W	04LN3017	03/18/04	03/25/04	03/25/04	
NITRATE NITRITE	005 MS	W	04LN3017	03/18/04	03/25/04	03/25/04	
TOTAL DISSOLVED SOLI	005	W	04LSS058	03/18/04	03/25/04	03/25/04	
TOTAL ORGANIC HALIDE	005	W	04LX009	03/18/04	04/13/04	04/13/04	
TOTAL ORGANIC HALIDE	005 MS	W	04LX009	03/18/04	04/13/04	04/13/04	
B18KP9							
ALKALINITY	008	W	04LAKA09	03/19/04	03/29/04	03/29/04	
ALKALINITY	008 REP	W	04LAKA09	03/19/04	03/29/04	03/29/04	
CHLORIDE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	
FLUORIDE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	
NITRITE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	2247
NITRATE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	~~2303~~ 2302
PHOSPHATE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	2247
SULFATE BY IC	008	W	04LBC019	03/19/04	03/31/04	03/31/04	
NITRATE NITRITE	008	W	04LN3017	03/19/04	03/25/04	03/25/04	
TOTAL DISSOLVED SOLI	008	W	04LSS058	03/19/04	03/25/04	03/25/04	
TOTAL ORGANIC HALIDE	008	W	04LX009	03/19/04	04/13/04	04/13/04	

LAB QC:

ALKALINITY	MB1	W	04LAKA09	N/A	03/29/04	03/29/04
ALKALINITY	MB1 BS	W	04LAKA09	N/A	03/29/04	03/29/04
ALKALINITY	MB1 BSD	W	04LAKA09	N/A	03/29/04	03/29/04
CHLORIDE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
CHLORIDE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
FLUORIDE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
FLUORIDE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
NITRITE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
NITRITE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
NITRATE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
NITRATE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
PHOSPHATE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
PHOSPHATE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
SULFATE BY IC	MB1	W	04LBC019	N/A	03/31/04	03/31/04
SULFATE BY IC	MB1 BS	W	04LBC019	N/A	03/31/04	03/31/04
NITRATE NITRITE	MB1	W	04LN3017	N/A	03/25/04	03/25/04

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-018 H2534

DATE RECEIVED: 03/24/04 LVL LOT # :0403L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	MB1 BS	W	04LN3017	N/A	03/25/04	03/25/04
TOTAL DISSOLVED SOLI	MB1	W	04LSS058	N/A	03/25/04	03/25/04
TOTAL DISSOLVED SOLI	MB1 BS	W	04LSS058	N/A	03/25/04	03/25/04
TOTAL DISSOLVED SOLI	MB1 BSD	W	04LSS058	N/A	03/25/04	03/25/04
TOTAL ORGANIC HALIDE	LC1 BS	W	04LX009	N/A	04/13/04	04/13/04
TOTAL ORGANIC HALIDE	MB1	W	04LX009	N/A	04/13/04	04/13/04

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-018 H2534
LVL#: 0403L123

W.O.#: 11343-606-001-9999-00
Date Received: 03-24-04

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 water samples.

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite, Nitrate and Phosphate that were received past hold (see the sample chronology summary for analyses times for short hold samples).

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of Nitrite, Nitrate, Phosphate and Total Organic Halides (TOX) as noted on the Sample Receipt Checklist.

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 and Total Dissolved Solids (TDS) were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Nitrate Nitrite and TOX were within the 75-125% control limits.

8. The replicate analyses for TDS, TOX, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Nitrate Nitrite, and Alkalinity were within the 20% RPD control limit.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

04-22-04
Date

njp\i03-123

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 24 pages.

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:**

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B18KR1	Alkalinity	140	MG/L	2.0	1.0
		Chloride by IC	16.5	MG/L	2.5	10.0
		Fluoride by IC	0.37	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	66.4	MG/L	2.50	10.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	32.2	MG/L	2.5	10.0
		Nitrate Nitrite	16.8	MG/L	0.50	25.0
		Total Dissolved Solids	326	MG/L	5.00	1.0
		Total Organic Halides	9.8	UG/L	5.2	1.0
-005	B18KP7	Alkalinity	147	MG/L	2.0	1.0
		Chloride by IC	15.0	MG/L	1.2	5.0
		Fluoride by IC	0.30	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	21.1	MG/L	1.25	5.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	26.7	MG/L	1.2	5.0
		Nitrate Nitrite	4.8	MG/L	0.20	10.0
		Total Dissolved Solids	262	MG/L	5.00	1.0
		Total Organic Halides	6.7	UG/L	5.2	1.0
-008	B18KP9	Alkalinity	132	MG/L	2.0	1.0
		Chloride by IC	21.9	MG/L	2.5	10.0
		Fluoride by IC	0.32	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	62.1	MG/L	2.50	10.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	31.0	MG/L	2.5	10.0
		Nitrate Nitrite	14.4	MG/L	0.50	25.0
		Total Dissolved Solids	323	MG/L	5.00	1.0
		Total Organic Halides	5.7	UG/L	5.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/15/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LAKA09-MB1	Alkalinity	0.50 u	MG/L	0.50	1.0
BLANK10	04LBC019-MB1	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	04LN3017-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	04LSS058-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0
BLANK1	04LX009-MB1	Total Organic Halides	5.2 u	UG/L	5.2	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/15/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-005	B18KP7	Chloride by IC	65.9	15.0	50.0	101.7	10.0
		Fluoride by IC	5.5	0.30	5.0	103.8	1.0
		Nitrite by IC	5.52	0.25u	5.00	110.5	1.0
		Nitrate by IC	72.6	21.1	50.0	102.9	10.0
		Phosphate by IC	5.2	0.25u	5.0	103.7	1.0
		Sulfate by IC	79.0	26.7	50.0	104.4	10.0
		Nitrate Nitrite	14.1	4.8	10.0	93.7	20.0
		Total Organic Halides	56.1	9.8	50.0	92.6	1.0
BLANK10	04LAKA09-MB1	Alkalinity	102	0.50u	100	101.8	1.0
		Alkalinity MSD	105	0.50u	100	105.0	1.0
BLANK10	04LBC019-MB1	Chloride by IC	4.7	0.25u	5.0	94.1	1.0
		Fluoride by IC	4.8	0.25u	5.0	95.9	1.0
		Nitrite by IC	4.58	0.25u	5.00	91.6	1.0
		Nitrate by IC	5.03	0.25u	5.00	100.6	1.0
		Phosphate by IC	5.1	0.25u	5.0	102.0	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.7	1.0
BLANK10	04LN3017-MB1	Nitrate Nitrite	0.50	0.02u	0.50	101.0	1.0
BLANK10	04LSS058-MB1	Total Dissolved Solids	51.0	5.00u	50.0	102.0	1.0
		Total Dissolved Solids	51.5	5.00u	50.0	103.0	1.0
LCS1	04LX009-LC1	Total Organic Halides	46.7	5.2 u	50.0	93.5	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/15/04

CLIENT: TNUHANFORD B03-018 H2534

LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	04LAKA09-MB1	Alkalinity	101.8	105.0	3.2
BLANK10	04LSS058-MB1	Total Dissolved Solids	102.0	103.0	0.98

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/15/04

CLIENT: TNUHANFORD B03-018 H2534 LVL LOT #: 0403L123

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B18KR1	Total Dissolved Solids	326	324	0.62	1.0
		Total Organic Halides	9.8	8.1	19.8	1.0
-005REP	B18KP7	Chloride by IC	15.0	15.2	1.1	5.0
		Fluoride by IC	0.30	0.34	11.8	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	21.1	21.0	0.40	5.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	26.7	26.5	0.90	5.0
		Nitrate Nitrite	4.8	4.8	0.00	10.0
-008REP	B18KP9	Alkalinity	132	134	1.7	1.0

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A/22/09

Lionville Laboratory Use Only

0403L123

Custody Transfer Record/Lab Work Request

Page 1 of 1

LIONVILLE LABORATORY INC.

13

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client Ecology SAF# B03018

Est. Final Proj. Sampling Date TNU Hanford B03-018

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager O Johnson

QC Spec Del Std TAT 30 Days

Date Rec'd 3/24/04 Date Due 4/23/04

		AC						J	D		E	F	G		H	I
Refrigerator #		1						3	3		3	3	3		3	3
#/Type Container	Liquid	3AG						1PL	1PL		1PL	1PL	1PL	1	1PL	1AG
	Solid															
Volume	Liquid	40						500	500		500	500	500	1	250	500
	Solid															
Preservatives		HCL						HNO3	HNO3		H2SO4	—	—	1	—	H2SO4
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb			Soluble Metals	Total Metal	CN	NOC NOS	TDS	IC Anions	1	Al K	TOX

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	06244						MET(50)	MET(10)		IN3N2	ITDS	ICCL, ICFL, ICNO3, ICNO2, ICSO4, ICPO4		IALL	ITOX
S - Soil	001	B18KRO			W	3/18/04	0859							1	✓ JA 3/24/04							
SE - Sediment	002	KR1					⊥	3							1		1	1	1	✓	1	1
SO - Solid	003	PL1					0730	3														
SL - Sludge	004	KP6					1039							1	✓ JA 3/24/04							
W - Water	005	KP7				⊥	⊥	3							1		1	1	1	✓	1	1
O - Oil	006	PL2				3-18-04	0730	3														
A - Air	007	KP8				3-19-04	1149							1	✓ JA 3/24/04							
DS - Drum Solids	008	KP9				⊥	⊥	3							1		1	1	1	✓	1	1
DL - Drum Liquids	009	PL3			⊥	3-19-04	0800	3														
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

SAF# B03-018 (per client)

Run Matrix QC

MET(10) = As, Ba, Cr, Pb, Se, Sn, V

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	3/24/04	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE"	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # See
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. ____ °C

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# I04-028-3

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: I04-028 B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-1180	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR0 (F)		W	3-18-04	0859	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KR1		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KR1		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KR1		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KR1		W			1x20-mL P	Activity Scan	None
B18KR1		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KR1		W			1x125-mL P	Carbon-14	None
B18KR1		W			4x1000-mL P	Iodine-129	None
B18KR1		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KR1		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	FedEx	3/19/4 1030
Fedex	3/19/4 1030		3/19/7 1030
3/23/04	2:15 pm	FedEx	
FedEx	3-24-04 1000	Victor Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

SAF No. ~~104-028~~ B03018 | Contact/Requestor DL STEWART | Telephone No. 509-376-5056 | MSIN | FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR1		W	3-18-04	0859	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KR1		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KR1		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		MAR 18 2004 1400	Fed Ex			3/19/4 1030
Relinquished By	Fedex		3/19/4 1020	Received By			3/19/4 10
Relinquished By			3/23/04 2:15 pm	Received By	Fed Ex		
Relinquished By	Fed Ex		3-24-04 1000	Received By	Victor Hernandez		3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-5

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-1480	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905 8342 0478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAFs into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL1		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL1		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			1400 3-18-04	Fed Ex			1030 3/19/4
Fedex			1010 3/19/4				1030 3/19/4
Fed Ex			3/23/04 2:15PM	Fed Ex			
Fed Ex			3-24-04 1000	Victor Hernandez			3-24-04 1000

Matrix *

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

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

Mar 18 04 11:36a DS105 - EC&R

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

~~104-028~~-1

17

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~I04-028~~ RT 7-804 1303018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H 80	Ice Chest No.: SMK 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP6 (F)		W	3-18-04	1031	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP7		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP7		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP7		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP7		W			1x20-mL P	Activity Scan	None
B18KP7		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP7		W			1x125-mL P	Carbon-14	None
B18KP7		W			4x1000-mL P	Iodine-129	None
B18KP7		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP7		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	Fed Ex	3/22/4 3pm
Fedex	3/22/4 3pm		3/22/4 3pm
	3/23/04 2:15 PM		
	3-24-04 1000	Victor Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I04-028-1

18

AF No. ~~I04-028~~ RST-18-04 B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP7		W	3-18-04	1039	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP7		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KP7		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. P. CONNOLLY			MAR 18 2004 1400	Fed Ex	P. Stewart		3/22/4
Relinquished By			Date/Time	Received By			Date/Time
			3/22/4				3/22/4
Relinquished By			Date/Time	Received By			Date/Time
			3/23/04 2:15 pm		Fed Ex		
Relinquished By			Date/Time	Received By			Date/Time
Fed E			3-24-04 1000	Victor Hernandez			3-24-04 1000

Matrix *

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

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

FINAL

SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

MLM 3/23/04 ~~104-028-6~~

Collector: D Connolly	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX: 9 I04-028-6
SAF No.: ~~104-028~~ B03-018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code: STOP
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SMC 137 Temp.: 03
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905-8342-0490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL2		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL2		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			3-18-04 1400	Fed Ex	P. LINTCHOVSKI		3/22/4 3:00
Fedex			3/22/4				3/22/4
			3/23/04 2:15 PM	Fed Ex			
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

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

PNNL SDG# H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I04-028-2

20

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: 03-19-04 ~~I04-028~~ B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS - SAWS - H80	Ice Chest No.: SAWS-125 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7900 9299 -3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP8 (F)		W	3-19-04	1149	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP9		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP9		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP9		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP9		W			1x20-mL P	Activity Scan	None
B18KP9		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP9		W			1x125-mL P	Carbon-14	None
B18KP9		W			4x1000-mL P	Iodine-129	None
B18KP9		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP9		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 19 2004 1300	Fed Ex Pavlin	3/22/4
Fedex	3/22/4		3/22/4
	3/23/04 2:15pm	Fed Ex	
Fed Ex	3-24-04 1000	V. Hernandez	3-24-04 1000

Matrix *

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

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

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-2

SAF No. ~~I04-028~~ 3-19-04 1303018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP9		W	3-19-04	1149	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP9		W			1x500-mL P	TDS - 160.1	Cool 4C
B18KP9		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

3-19-04

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		1300 MAR 19 2004	Fed Ex			3/22/4
Fedex			3/22/4 12				3/22/4 12
Fed Ex			3/23/04 2:15pm	Fed Ex			
Fed Ex			3/24/04 1000				3-24-04 1000

Matrix *

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

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

Disposed By

Date/Time

PNNL SDG # H2534

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-7

22

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SML-125 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7906 9299-3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL3		W	3-19-04	0800	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL3		W	↓	↓	1x20-mL P	Activity Scan	None

3-19-04

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.P. CONNOLLY			MAR 19 2004 1300	Fed Ex			3/24/4
Relinquished By: Fedex			3/22/4 12	Received By			3/22/4 12
Relinquished By			3/23/04 2:15 pm	Received By			Date/Time
Relinquished By			3/24/04 1000	Received By: J. Hernandez			3-24-04 1000

Matrix *

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

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

SDG# H2534

Eberline Srvces

CHAIN OF CUSTODY

ORD # R4-03-103

03/23/04 12:56:37

WORK ID: SAF# B03-018 SDG H2534

RCVD: 03/19/04 DUE: 04/18/04

KEEP: 04/18/05 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	W B18KR0 (F)	SCA-2	DISPOS E015
01B	W B18KR0 (F) MS	SCA-2	E015
01C	W B18KR0 (F) DUP	SCA-2	E015
02A	W B18KR1	LION	DISPOS E015 E122 E153 E211 E260 E265 E287
02B	W B18KR1 MS	LION	E015 E122 E153 E211 E260 E265 E287
02C	W B18KR1 DUP	LION	E015 E122 E153 E211 E260 E265 E287
03A	W B18PL1	LION	DISPOS E122
04A	W B18KP6 (F)	LION	DISPOS E015
05A	W B18KP7	LION	DISPOS E015 E122 E153 E211 E260 E265 E287
06A	W B18PL2	LION	DISPOS E122
07A	W B18KP8 (F)	LION	DISPOS E015
08A	W B18KP9	LION	DISPOS E015 E122 E153 E211 E260 E265 E287
09A	W B18PL3	LION	DISPOS E122

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
[signature]	3/23/04	Lioville lab	3/23/04		

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Eberline **Date:** 3/24/04

Purchase Order / Project# / SAF#/ SOW# / Release #: SDG H2534 B03018

LvLI Batch # : 0403L123 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7905 8835 4340 4339	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 2° 3	°C	Cooler #	SML125 SML 137
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes/No 4-15-04	☑ No	NO_2 NO_3 PO_4 rec'd past hold	
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☑ No	☐ N/A	Head Space
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes/No 4-15-04	☑ No	Acc #12, 13	
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B

EBERLINE
SERVICES

RECEIVED
MAY 2004

May 24, 2004

Ms. Joan Kessner
Bechtel Hanford Inc.
3190 George Washington Way
MSIN H9-02
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R4-03-104-7004, SDG H2534

Dear Ms. Kessner:

Enclosed is the data report for three water samples designated under SAF No. B03-018 received at Eberline Services on March 19, 2004. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2534 was composed of three water samples designated under SAF No. B03-018 with a Project Title of: ERDF March 2004.

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 April 22, 2004 and May 10, 2004.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.5 Radium-226 Analyses

The QC LCS initially failed with a recovery of 136%. The samples were realiquoted with new QC samples and reanalyzed. The QC LCS recovery for the reanalysis was acceptable at 86%; reanalysis results are reported herein.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

5/24/4

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2534

SDG	7004
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2534

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

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Work Summary	6
Method Blanks	8
Lab Control Samples	10
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Method Summaries	18
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Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

SDG 7004
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2534

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2534

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R403104-01	B18KR1	Handford Site	WATER		B03-018	I04-028-3	03/18/04 08:59
R403104-02	B18KP7	Handford Site	WATER		B03-018	I04-028-1	03/18/04 10:39
R403104-03	B18KP9	Handford Site	WATER		B03-018	I04-028-2	03/14/04 11:49
R403104-04	Lab Control Sample		WATER		B03-018		
R403104-05	Method Blank		WATER		B03-018		
R403104-06	Duplicate (R403104-01)	Handford Site	WATER		B03-018		03/18/04 08:59
R403104-07	Spike (R403104-01)	Handford Site	WATER		B03-018		03/18/04 08:59
R403104-08	Lab Control Sample		WATER		B03-018		
R403104-09	Method Blank		WATER		B03-018		
R403104-10	Duplicate (R403104-01)	Handford Site	WATER		B03-018		03/18/04 08:59

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

QC SUMMARY

SDG 7004
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2534

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
7004	I04-028-1	B18KP7	WATER		8.52 L		03/22/04	4	R403104-02	7004-002
	I04-028-2	B18KP9	WATER		8.52 L		03/22/04	8	R403104-03	7004-003
	I04-028-3	B18KR1	WATER		8.52 L		03/19/04	1	R403104-01	7004-001
		Method Blank	WATER						R403104-05	7004-005
		Method Blank	WATER						R403104-09	7004-009
		Lab Control Sample	WATER						R403104-04	7004-004
		Lab Control Sample	WATER						R403104-08	7004-008
		Duplicate (R403104-01)	WATER		8.52 L		03/19/04	1	R403104-06	7004-006
		Duplicate (R403104-01)	WATER		8.52 L		03/19/04	1	R403104-10	7004-010
		Spike (R403104-01)	WATER		8.52 L		03/19/04	1	R403104-07	7004-007

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2534

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	7084-132	10.0	3			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	7084-132	20.0	3			1	1	1/1		
93B	WATER	Gross Beta in Water	7084-132	15.0	3			1	1	1/1		
Gamma Spectroscopy												
I	WATER	Iodine 129 in Water	7084-132	5.0	3			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	WATER	Uranium, Total in Water	7084-132	9.0	3			1	1	1/1		
Liquid Scintillation Counting												
C	WATER	Carbon 14 in Water	7084-132	10.0	3			1	1	1/1	1/1	X
Radon Counting												
RA	WATER	Radium 226 in Water	7084-132	5.0	3			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2534

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R403104-01	B18KR1			7004-001	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
03/18/04	Handford Site		WATER	7004-001	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
03/19/04	I04-028-3	B03-018		7004-001	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-001	I		04/13/04	04/21/04	MWT	Iodine 129 in Water
				7004-001	RA	A1	05/06/04	05/07/04	MWT	Radium 226 in Water
				7004-001	TC		04/05/04	04/21/04	MWT	Technetium 99 in Water
				7004-001	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water
R403104-02	B18KP7			7004-002	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
03/18/04	Handford Site		WATER	7004-002	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
03/22/04	I04-028-1	B03-018		7004-002	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-002	I		04/15/04	04/21/04	MWT	Iodine 129 in Water
				7004-002	RA	A1	05/06/04	05/07/04	MWT	Radium 226 in Water
				7004-002	TC		04/05/04	04/21/04	MWT	Technetium 99 in Water
				7004-002	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water
R403104-03	B18KP9			7004-003	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
03/14/04	Handford Site		WATER	7004-003	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
03/22/04	I04-028-2	B03-018		7004-003	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-003	I		04/19/04	04/21/04	MWT	Iodine 129 in Water
				7004-003	RA	A1	05/06/04	05/07/04	MWT	Radium 226 in Water
				7004-003	TC		04/05/04	04/21/04	MWT	Technetium 99 in Water
				7004-003	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water
R403104-04	Lab Control Sample			7004-004	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
			WATER	7004-004	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
		B03-018		7004-004	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-004	I		04/14/04	04/21/04	MWT	Iodine 129 in Water
				7004-004	TC		04/05/04	04/21/04	MWT	Technetium 99 in Water
				7004-004	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water
R403104-05	Method Blank			7004-005	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
			WATER	7004-005	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
		B03-018		7004-005	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-005	I		04/20/04	04/21/04	MWT	Iodine 129 in Water
				7004-005	TC		04/06/04	04/21/04	MWT	Technetium 99 in Water
				7004-005	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2534

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R403104-06	Duplicate (R403104-01)			7004-006	93A/93		04/16/04	04/21/04	MWT	Gross Alpha in Water
03/18/04	Handford Site		WATER	7004-006	93B/93		04/16/04	04/21/04	MWT	Gross Beta in Water
03/19/04		B03-018		7004-006	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
				7004-006	I		04/20/04	04/21/04	MWT	Iodine 129 in Water
				7004-006	TC		04/07/04	04/21/04	MWT	Technetium 99 in Water
				7004-006	U_T		03/30/04	04/21/04	MWT	Uranium, Total in Water
R403104-07	Spike (R403104-01)			7004-007	C		04/15/04	04/21/04	MWT	Carbon 14 in Water
03/18/04	Handford Site		WATER							
03/19/04		B03-018								
R403104-08	Lab Control Sample			7004-008	RA		05/06/04	05/07/04	MWT	Radium 226 in Water
			WATER							
		B03-018								
R403104-09	Method Blank			7004-009	RA		05/06/04	05/07/04	MWT	Radium 226 in Water
			WATER							
		B03-018								
R403104-10	Duplicate (R403104-01)			7004-010	RA		05/06/04	05/07/04	MWT	Radium 226 in Water
03/18/04	Handford Site		WATER							
03/19/04		B03-018								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B03-018	Gross Alpha in Water	900.0_ALPHABETA_GPC	3			1	1	1		6
93B/93	B03-018	Gross Beta in Water	900.0_ALPHABETA_GPC	3			1	1	1		6
C	B03-018	Carbon 14 in Water	C14_CHEM_LSC	3			1	1	1	1	7
I	B03-018	Iodine 129 in Water	I129_SEP_LEPS_GS	3			1	1	1		6
RA	B03-018	Radium 226 in Water	903.1_RA226_LUC	3			1	1	1		6
TC	B03-018	Technetium 99 in Water	TC99_TR_SEP_LSC	3			1	1	1		6
U_T	B03-018	Uranium, Total in Water	UTOT_KPA	3			1	1	1		6
TOTALS				21			7	7	7	1	43

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-005

Method Blank

METHOD BLANK

SDG	7004	Client/Case no	Hanford	SDG_H2534	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403104-05	Client sample id	Method Blank		
Dept sample id	7004-005	Material/Matrix		WATER	
		SAF No	B03-018		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.457	0.96	1.6	3.0	U	93A
Gross Beta	12587-47-2	-1.07	2.1	3.6	4.0	U	93B
Carbon 14	14762-75-5	12.6	22	37	200	U	C
Technetium 99	14133-76-7	-0.040	1.7	5.2	15	U	TC
Total Uranium (ug/L)	7440-61-1	-0.002	0.007	0.017	0.10	U	U_T
Iodine 129	15046-84-1	0.827	1.8	3.9	5.0	U	I

ERDF March 2004

QC-BLANK #47110

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-009

Method Blank

METHOD BLANK

SDG	7004	Client/Case no	Hanford	SDG H2534	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403104-09	Client sample id	Method Blank		
Dept sample id	7004-009	Material/Matrix		WATER	
		SAF No	B03-018		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Radium 226	13982-63-3	-0.179	0.44	0.98	2.0	U	RA

ERDF March 2004

QC-BLANK 47321

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-004

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7004
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2534
Contract No. 630

Lab sample id R403104-04
Dept sample id 7004-004

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B03-018

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	156	11	2.1	3.0		93A	143	5.7	109	65-135	70-130
Gross Beta	146	7.6	5.0	4.0		93B	147	5.9	99	76-124	70-130
Carbon 14	7360	84	38	200		C	7970	320	92	85-115	80-120
Technetium 99	1050	26	5.5	15		TC	1090	44	96	84-116	80-120
Total Uranium (ug/L)	81.0	9.1	0.17	0.10		U_T	82.5	3.3	98	78-122	80-120
Iodine 129	486	5.0	6.1	5.0		I	464	19	105	90-110	80-120

ERDF March 2004

QC-LCS #47109

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-008

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7004
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2534
Contract No. 630

Lab sample id R403104-08
Dept sample id 7004-008

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B03-018

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
Radium 226	264	7.7	0.89	2.0		RA	308	12	86	91-109	80-120

ERDF March 2004

QC-LCS 47320

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-006

B18KR1

DUPLICATE

SDG	7004			Client/Case no	Hanford SDG H2534
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R403104-06	Lab sample id	R403104-01	Client sample id	B18KR1
Dept sample id	7004-006	Dept sample id	7004-001	Location/Matrix	Handford Site WATER
		Received	03/19/04	Collected/Volume	03/18/04 08:59 8.52 L
				Custody/SAF No	I04-028-3 B03-018

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	1.25	1.9	2.4	3.0	U	93A	1.83	2.1	2.4	U	-		
Gross Beta	29.2	3.9	3.9	4.0		93B	29.8	3.8	3.8		2	42	
Carbon 14	31.4	23	38	200	U	C	10.2	24	39	U	-		
Technetium 99	54.0	5.3	5.2	15		TC	56.4	3.8	3.6		4	28	
Total Uranium (ug/L)	2.87	0.30	0.017	0.10		U_T	2.94	0.31	0.017		2	29	
Iodine 129	11.6	1.4	2.7	5.0		I	11.0	1.3	2.6		5	28	

ERDF March 2004

QC-DUP#1 47147

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-010

B18KR1

DUPLICATE

SDG	7004			Client/Case no	Hanford SDG H2534
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R403104-10	Lab sample id	R403104-01	Client sample id	B18KR1
Dept sample id	7004-010	Dept sample id	7004-001	Location/Matrix	Handford Site WATER
		Received	03/19/04	Collected/Volume	03/18/04 08:59 8.52 L
				Custody/SAF No	I04-028-3 B03-018

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Radium 226	0.451	0.60	1.0	2.0	U	RA	0.570	0.53	0.82	U	-		

ERDF March 2004

QC-DUP#1A1 47322

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-007

B18KR1

MATRIX SPIKE

SDG	7004			Client/Case no	Hanford SDG H2534
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R403104-07	Lab sample id	R403104-01	Client sample id	B18KR1
Dept sample id	7004-007	Dept sample id	7004-001	Location/Matrix	Handford Site WATER
		Received	03/19/04	Collected/Volume	03/18/04 08:59 8.52 L
				Custody/SAF No	I04-028-3 B03-018

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
Carbon 14	45100	460	110	200	X	C	47900	1900	10.2	24	94	85-115	60-140

ERDF March 2004

QC-MS#1 47148

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-001 B18KR1

DATA SHEET

SDG	7004	Client/Case no	Hanford SDG_H2534
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403104-01	Client sample id	B18KR1
Dept sample id	7004-001	Location/Matrix	Handford Site WATER
Received	03/19/04	Collected/Volume	03/18/04 08:59 8.52 L
		Custody/SAF No	I04-028-3 B03-018

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.83	2.1	2.4	3.0	U	93A
Gross Beta	12587-47-2	29.8	3.8	3.8	4.0		93B
Carbon 14	14762-75-5	10.2	24	39	200	U	C
Technetium 99	14133-76-7	56.4	3.8	3.6	15		TC
Total Uranium (ug/L)	7440-61-1	2.94	0.31	0.017	0.10		U_T
Radium 226	13982-63-3	0.570	0.53	0.82	2.0	U	RA
Iodine 129	15046-84-1	11.0	1.3	2.6	5.0		I

ERDF March 2004

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-002 B18KP7

DATA SHEET

SDG	7004	Client/Case no	Hanford SDG_H2534
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403104-02	Client sample id	B18KP7
Dept sample id	7004-002	Location/Matrix	Handford Site WATER
Received	03/22/04	Collected/Volume	03/18/04 10:39 8.52 L
		Custody/SAF No	I04-028-1 B03-018

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.26	1.8	1.7	3.0		93A
Gross Beta	12587-47-2	25.8	2.6	2.3	4.0		93B
Carbon 14	14762-75-5	33.9	23	37	200	U	C
Technetium 99	14133-76-7	59.4	4.0	4.0	15		TC
Total Uranium (ug/L)	7440-61-1	2.24	0.24	0.017	0.10		U_T
Radium 226	13982-63-3	0.232	0.56	1.0	2.0	U	RA
Iodine 129	15046-84-1	4.86	1.1	2.4	5.0		I

ERDF March 2004

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

7004-003 B18KP9

DATA SHEET

SDG	7004	Client/Case no	Hanford SDG H2534
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403104-03	Client sample id	B18KP9
Dept sample id	7004-003	Location/Matrix	Handford Site WATER
Received	03/22/04	Collected/Volume	03/14/04 11:49 8.52 L
		Custody/SAF No	I04-028-2 B03-018

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.73	1.9	2.1	3.0	U	93A
Gross Beta	12587-47-2	28.1	3.0	2.7	4.0		93B
Carbon 14	14762-75-5	16.4	22	37	200	U	C
Technetium 99	14133-76-7	54.7	3.9	3.9	15		TC
Total Uranium (ug/L)	7440-61-1	2.12	0.22	0.017	0.10		U_T
Radium 226	13982-63-3	0.611	0.59	0.92	2.0	U	RA
Iodine 129	15046-84-1	11.8	1.7	3.5	5.0		I

ERDF March 2004

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test TC Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99
Preparation batch 7084-132					
R403104-01			7004-001	B18KR1	56.4
R403104-02			7004-002	B18KP7	59.4
R403104-03			7004-003	B18KP9	54.7
R403104-04			7004-004	LCS (QC ID=47109)	ok
R403104-05			7004-005	BLK (QC ID=47110)	U
R403104-06			7004-006	Duplicate (R403104-01)	ok
Nominal values and limits from method ERDF March 2004				RDLs (pCi/L)	15

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 10.0 % Reference Lab Notebook 7084 pg. 132													
R403104-01			B18KR1	3.6	0.100			98		100			18	03/31/04	04/05	GRB-230
R403104-02			B18KP7	4.0	0.100			95		100			18	03/31/04	04/05	GRB-231
R403104-03			B18KP9	3.9	0.100			92		100			22	03/31/04	04/05	GRB-232
R403104-04			LCS (QC ID=47109)	5.5	0.100			96		50				03/31/04	04/05	GRB-221
R403104-05			BLK (QC ID=47110)	5.2	0.100			96		50				03/31/04	04/06	GRB-203
R403104-06			Duplicate (R403104-01) (QC ID=47111)	5.2	0.100			97		50			20	03/31/04	04/07	GRB-224
Nominal values and limits from method				15	0.100			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-002	Q.C. Preparation, rev 4
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-430	Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD FOR 6 SAMPLES				
	MDA	4.6	±	1.6
	YIELD	96	±	4

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test 93A Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha	
Preparation batch 7084-132						
R403104-01	93		7004-001	B18KR1	U	
R403104-02	93		7004-002	B18KP7	2.26	
R403104-03	93		7004-003	B18KP9	U	
R403104-04	93		7004-004	LCS (QC ID=47109)	ok	
R403104-05	93		7004-005	BLK (QC ID=47110)	U	
R403104-06	93		7004-006	Duplicate (R403104-01)	-	U
Nominal values and limits from method ERDF March 2004				RDLs (pCi/L)	3.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 20.0 % Reference Lab Notebook 7084 pg. 132													
R403104-01	93		B18KR1	2.4	0.140			69		100			29	04/15/04	04/16	GRB-101
R403104-02	93		B18KP7	1.7	0.250			107		100			29	04/15/04	04/16	GRB-102
R403104-03	93		B18KP9	2.1	0.200			102		100			33	04/15/04	04/16	GRB-101
R403104-04	93		LCS (QC ID=47109)	2.1	0.140			19		100				04/15/04	04/16	GRB-114
R403104-05	93		BLK (QC ID=47110)	1.6	0.140			20		100				04/15/04	04/16	GRB-101
R403104-06	93		Duplicate (R403104-01) (QC ID=47111)	2.4	0.140			69		100			29	04/15/04	04/16	GRB-102
Nominal values and limits from method				3.0	0.140			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 2.0 ± 0.68
RESIDUE 64 ± 76

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test 93B Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Preparation batch 7084-132					
R403104-01	93		7004-001	B18KR1	29.8
R403104-02	93		7004-002	B18KP7	25.8
R403104-03	93		7004-003	B18KP9	28.1
R403104-04	93		7004-004	LCS (QC ID=47109)	ok
R403104-05	93		7004-005	BLK (QC ID=47110)	U
R403104-06	93		7004-006	Duplicate (R403104-01)	ok
Nominal values and limits from method ERDF March 2004				RDLs (pCi/L)	4.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 15.0 % Reference Lab Notebook 7084 pg. 132													
R403104-01	93		B18KR1	3.8	0.140			69		100			29	04/15/04	04/16	GRB-101
R403104-02	93		B18KP7	2.3	0.250			107		100			29	04/15/04	04/16	GRB-102
R403104-03	93		B18KP9	2.7	0.200			102		100			33	04/15/04	04/16	GRB-101
R403104-04	93		LCS (QC ID=47109)	5.0	0.140			19		100				04/15/04	04/16	GRB-114
R403104-05	93		BLK (QC ID=47110)	3.6	0.140			20		100				04/15/04	04/16	GRB-101
R403104-06	93		Duplicate (R403104-01) (QC ID=47111)	3.9	0.140			69		100			29	04/15/04	04/16	GRB-102
Nominal values and limits from method				4.0	0.140			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 3.6 ± 1.9
RESIDUE 64 ± 76

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test I Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN WATER
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7084-132					
R403104-01			7004-001	B18KR1	11.0
R403104-02			7004-002	B18KP7	4.86
R403104-03			7004-003	B18KP9	11.8
R403104-04			7004-004	LCS (QC ID=47109)	ok
R403104-05			7004-005	BLK (QC ID=47110)	U
R403104-06			7004-006	Duplicate (R403104-01)	ok
Nominal values and limits from method ERDF March 2004				RDLs (pCi/L)	5.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 5.0 %	Reference Lab Notebook 7084 pg. 132												
R403104-01			B18KR1	2.6	0.250			99		836			26	04/13/04	04/13	XSPEC-004
R403104-02			B18KP7	2.4	0.250			98		1027			28	04/13/04	04/15	XSPEC-004
R403104-03			B18KP9	3.5	0.250			81		950			36	04/13/04	04/19	XSPEC-004
R403104-04			LCS (QC ID=47109)	6.1	0.250			85		911				04/13/04	04/14	XSPEC-004
R403104-05			BLK (QC ID=47110)	3.9	0.250			71		585				04/13/04	04/20	XSPEC-004
R403104-06			Duplicate (R403104-01) (QC ID=47111)	2.7	0.250			94		849			33	04/13/04	04/20	XSPEC-004
Nominal values and limits from method				5.0	0.250			20-105		300	100		180			

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	CP-560	Iodine-129 Purification, rev 4

AVERAGES ± 2 SD FOR 6 SAMPLES				
	MDA	3.5	±	2.8
	YIELD	88	±	22

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test U T Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Uranium
Preparation batch 7084-132					
R403104-01			7004-001	B18KR1	2.94
R403104-02			7004-002	B18KP7	2.24
R403104-03			7004-003	B18KP9	2.12
R403104-04			7004-004	LCS (QC ID=47109)	ok
R403104-05			7004-005	BLK (QC ID=47110)	U
R403104-06			7004-006	Duplicate (R403104-01)	ok
Nominal values and limits from method ERDF March 2004				RDLs (ug/L)	0.10

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA ug/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7084-132			2σ prep error 9.0 %	Reference Lab Notebook 7084 pg. 132												
R403104-01			B18KR1	0.017	0.0200								12	03/30/04	03/30	KPA-001
R403104-02			B18KP7	0.017	0.0200								12	03/30/04	03/30	KPA-001
R403104-03			B18KP9	0.017	0.0200								16	03/30/04	03/30	KPA-001
R403104-04			LCS (QC ID=47109)	0.17	0.0200									03/30/04	03/30	KPA-001
R403104-05			BLK (QC ID=47110)	0.017	0.0200									03/30/04	03/30	KPA-001
R403104-06			Duplicate (R403104-01) (QC ID=47111)	0.017	0.0200								12	03/30/04	03/30	KPA-001
Nominal values and limits from method				0.10	0.0200								180			

PROCEDURES	REFERENCE	
	UTOT_KPA	
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.042 ± 0.12
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test C Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 7084-132						
R403104-01			7004-001	B18KR1	U	
R403104-02			7004-002	B18KP7	U	
R403104-03			7004-003	B18KP9	U	
R403104-04			7004-004	LCS (QC ID=47109)	ok	
R403104-05			7004-005	BLK (QC ID=47110)	U	
R403104-06			7004-006	Duplicate (R403104-01)	-	U
R403104-07			7004-007	Spike (R403104-01)	ok	X

Nominal values and limits from method RDLs (pCi/L) 200
ERDF March 2004

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 10.0 %	Reference Lab Notebook 7084 pg. 132												
R403104-01			B18KR1	39	0.0300			100		100			28	04/15/04	04/15	LSC-004
R403104-02			B18KP7	37	0.0300			100		100			28	04/15/04	04/15	LSC-004
R403104-03			B18KP9	37	0.0300			100		100			32	04/15/04	04/15	LSC-004
R403104-04			LCS (QC ID=47109)	38	0.0300			100		100				04/15/04	04/15	LSC-004
R403104-05			BLK (QC ID=47110)	37	0.0300			100		100				04/15/04	04/15	LSC-004
R403104-06			Duplicate (R403104-01) (QC ID=47111)	38	0.0300			100		100			28	04/15/04	04/15	LSC-004
R403104-07			Spike (R403104-01) (QC ID=47112)	110	0.0200			100		29			28	04/15/04	04/15	LSC-004
Nominal values and limits from method				200	0.0300					50			180			

PROCEDURES REFERENCE C14_CHEM_LSC
CP-241 Carbon-14 in Aqueous Samples, rev 4

AVERAGES ± 2 SD MDA 48 ± 55
FOR 7 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

Test RA Matrix WATER
SDG 7004
Contact Melissa C. Mannion

LAB METHOD SUMMARY

RADIUM 226 IN WATER

RADON COUNTING

Client Hanford
Contract No. 630
Contract SDG H2534

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Radium 226
Preparation batch 7084-132					
R403104-01		A1	7004-001	B18KR1	U
R403104-02		A1	7004-002	B18KP7	U
R403104-03		A1	7004-003	B18KP9	U
R403104-08			7004-008	LCS (QC ID=47320)	LOW
R403104-09			7004-009	BLK (QC ID=47321)	U
R403104-10			7004-010	Duplicate (R403104-01)	- U
Nominal values and limits from method ERDF March 2004				RDLs (pCi/L)	2.0

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	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 7084-132			2σ prep error 5.0 % Reference Lab Notebook 7084 pg. 132													
R403104-01		A1	B18KR1	0.82	0.0400			100		100			49	05/06/04	05/06	RN-010
R403104-02		A1	B18KP7	1.0	0.0400			100		100			49	05/06/04	05/06	RN-012
R403104-03		A1	B18KP9	0.92	0.0400			100		100			53	05/06/04	05/06	RN-013
R403104-08			LCS (QC ID=47320)	0.89	0.0400			100		100				05/06/04	05/06	RN-014
R403104-09			BLK (QC ID=47321)	0.98	0.0400			100		100				05/06/04	05/06	RN-015
R403104-10			Duplicate (R403104-01) (QC ID=47322)	1.0	0.0400			100		100			49	05/06/04	05/06	RN-016
Nominal values and limits from method				2.0	0.0400			20-105		100			180			

PROCEDURES REFERENCE 903.1_RA226_LUC
CP-881 Radium-226 in Water and Dissolved Samples, rev 0

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.94 ± 0.14
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG	7004
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	05/10/04

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2534

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Protocol Hanford
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Form DVD-RG
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SDG 7004
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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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GUIDE, cont.

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Contract No. 630
Case no SDG H2534

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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Protocol Hanford
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SDG 7004
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GUIDE, cont.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2534

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

SDG 7004
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2534

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

SDG 7004
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2534

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/10/04

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-3

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART H2534 (7004)	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: I04-028 B03018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DJS-SAWS-1180	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): UTMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR0 (F)		W	3-18-04	0859	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KR1		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KR1		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KR1		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KR1		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KR1		W			1x20-mL P	Activity Scan	None
B18KR1		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KR1		W			1x125-mL P	Carbon-14	None
B18KR1		W			4x1000-mL P	Iodine-129	None
B18KR1		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KR1		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	FedEx	3/19/4 1030
Fedex	3/19/4 1030		3/19/7 1030

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H2534 (7004)

I04-028-3

SAF No. ~~104-028~~ 155 3-18-04 1303018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KR1		W	3-18-04	0859	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KR1		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KR1		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. P. CONNOLLY			MAR 18 2004 1400	Fed Ex			3/19/4 1030
Fedex			3/19/4 10				3/19/4 10

Matrix *

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

FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I04-028-5

Collector: D Connolly	Contact/Requester: DL STEWART H2534 (7004)	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-480	Ice Chest No.: WM-1 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905 8342 0478
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL1		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL1		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By: D Connolly (Print) (Sign)	Date/Time: 348-04 1400	Received By: Fed Ex (Print) (Sign)	Date/Time: 3/19/4 1030
Relinquished By: Fedex	Date/Time: 3/19/4 10	Received By:	Date/Time: 3/19/4 1030
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# ~~104-028~~-1

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART H2534 (7004)	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~104-028~~ RT 7-804 B303018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H 80	Ice Chest No.: SMK 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 790583420490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP6 (F)		W	3-18-04	1037	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP7		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP7		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP7		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP7		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP7		W			1x20-mL P	Activity Scan	None
B18KP7		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP7		W			1x125-mL P	Carbon-14	None
B18KP7		W			4x1000-mL P	Iodine-129	None
B18KP7		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP7		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 18 2004 1400	Fed Ex P. Jamison	3/22/4 3 pm
Fedex	3/22/4 3 pm		3/22/4 3 pm

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H2534 (7004)

C.O.C. # I04-028-1

AF No. ~~I04-028~~ 1875-18-04 B03018

Contact/Requestor: DL STEWART

Telephone No.: 509-376-5056

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP7		W	3-18-04	1079	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP7		W	↓	↓	1x500-mL P	TDS - 160.1	Cool 4C
B18KP7		W	↓	↓	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		MAR 18 2004 1400		Fed Ex Pickup		3/22/4
Relinquished By: Fedex			3/22/4	Received By			3/22/4
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

MLM 3/23/04 ~~104-028-6~~

Collector: D Connolly	Contact/Requester: DL STEWART H2534 (7004)	Telephone No.: 509-376-5056 MSIN FAX 9I04-028-6
SAF No.: ~~104-028~~ B03-018	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code: SOF
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SMC 137 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7905-8342-0490
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL2		W	3-18-04	0730	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL2		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			3-18-04 1400	Fed Ex	P. LINTCHOVSKI		3/22/4 3:00
Relinquished By: Fedex			3/22/4 3:2	Received By			3/22/4
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H2534 (7004)

I04-028-2

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: 3-19-04 B03018 ~~I04-028~~	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS-SAWS-H80	Ice Chest No.: SAWS-125 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7900 9299 -3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "I04" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP8 (F)		W	3-19-04	1149	1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18KP9		W			1x500-mL P	ICP Metals - 6010TR (Client List) {Arsenic, Barium, Chromium, Lead, Selenium, Tin, Vanadium}	HNO3 to pH <2
B18KP9		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}	Cool 4C
B18KP9		W			1x250-mL P	Alkalinity - 310.1	Cool 4C
B18KP9		W			1x500-mL P	NO2/NO3 - 353.2	H2SO4 to pH <2 Cool 4C
B18KP9		W			1x20-mL P	Activity Scan	None
B18KP9		W			2x1000-mL P	Gross Alpha; Gross Beta	HNO3 to pH <2
B18KP9		W			1x125-mL P	Carbon-14	None
B18KP9		W			4x1000-mL P	Iodine-129	None
B18KP9		W			2x1000-mL P	Radium -226	HNO3 to pH <2
B18KP9		W			1x250-mL P	Technetium-99	HCl to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
D. P. CONNOLLY	MAR 19 2004 1300	Fed Ex Paulin Imlowski	3/22/4
Fedex	3/22/4		3/22/4

Matrix *

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

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

NNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H2534 (7004)

I04-028-2

AF No. 3-19-04 ~~I04-028~~ 303018

Contact/Requestor: DL STEWART

Telephone No. 509-376-5056 MSIN FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18KP9		W	3-19-04	1149	1x125-mL P	Total Uranium	HNO3 to pH <2
B18KP9		W			1x500-mL P	TDS - 160.1	Cool 4C
B18KP9		W			1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

3-19-04

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. P. CONNOLLY		1300 MAR 19 2004	Fed Ex	P. Linscheid		3/22/4 12
Relinquished By			Date/Time	Received By			Date/Time
Fedex			3/22/4 12				3/22/4
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

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

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H2534 (7004)

C.O.C.# I04-028-7

Collector: D. P. CONNOLLY	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: ~~T04-028~~ B03-018 MCM 3/23/4	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF MARCH 2004	Logbook No.: DTS - SAWS - H80	Ice Chest No.: SML-125 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 7906 9299-3445
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "104" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18PL3		W	3-19-04	0800	3x40-mL aGs*	VOA - 8260A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B18PL3		W	↓	↓	1x20-mL P	Activity Scan	None

3-19-04

Relinquished By	Date/Time	Received By	Date/Time
D.P. CONNOLLY Print / Sign	MAR 19 2004 1300	Fed Ex Print / P. Bucciarelli Sign	3/22/4
Fedex	3/22/4 12		3/22/4 12

Matrix *

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

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

RICHMOND, CA LABORATORY

EBERLINE SERVICES

SAMPLE RECEIPT CHECKLIST

Client: HANFORD City RICHLAND State WA

Date/Time received 3/22/4 3:00 CoC No. 104-028-1

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

INSPECTION

1. Custody seals on shipping container intact? Yes [Y] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [Y] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [Y] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [Y] No [ ] N/A [ ]
5. Packing material is: Wet [Y] Dry [ ]
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: B18KP6-1 B18KP7-21 (Or see CoC _____)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [X] Not preserved [ ] pH _____ Preservative HCl, HNO_3
13. Describe any anomalies: _____
14. Was P.M. notified of any anomalies? Yes [ ] No [X] Date 3/22/4
15. Inspected by [signature] Date: 3/22/4 Time: 4:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. _____ Calibration date _____

EBERLINE SERVICES

RICHMOND, CA LABORATORY
ICE CHEST RECEIPT LOG

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

Customer: HANFORD Date: 3/22/4

Ice chest # or description	HANFORD					
*Ice chest scanned for activity?	yes					
Custody seals on ice chest intact?	yes					
Custody seals dated?	yes					
Custody seals signed?	yes					
Thermometer number	6536					
Thermometer: time in	9 00 AM					
Thermometer: time out	9 30 AM					
Thermometer reading	3°C					
Correction factor	0.0					
**Actual temperature	3°C					
Custody seals on samples?	yes					
Custody seals dated?	yes					
Custody seals signed?	yes					

* = If activity indicated, perform wipe test and record alpha; beta/gamma reading in cpm.
** = Record temperature in degrees Celsius.

Technician: [signature]

Comments: