0059310

SAF-B02-024
618-4 Burial Ground – Anomalous Waste (Solids)
FINAL DATA PACKAGE

FAX RESULTS TO:

Jeff Lerch 373-5373 _____N/A_____
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Jeff Lerch _____N/A_____
INITIAL/DATE

MAIL COMPLETE COPY OF DATA PACKAGE TO:

Jeff Lerch L6-06 _____N/A_____
INITIAL/DATE

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

SDG _____H2065____ SAF-B02-024

Rad only Chem only X Rad & Chem

X Complete Partial

RECEIVED
MAY 13 2003
EDMC

LIONVILLE LABORATORY INC.

20 February 2003

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 #	0302L665
SDG #	H2065
SAF #	B02-024
Date Received	2-9-03
# Samples	1
Matrix	Other Solid
Volatiles	X
Semivolatiles	
Pest/PCB	X
DRO	
GRO	
Metals	X
Inorganics	

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

RECEIVED FEB 2003

r:\group\pm\orlette\tnu-hanford\data\b_ltrs.doc

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

FEB 2003

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B02-024 H2065

DATE RECEIVED: 02/06/03 LVL LOT # :0302L665

CLIENT ID	LVL #	MTX	PREP #	LEACH DATE	EXTR/PREP	ANALYSIS
J00BT1	002	W	03LVJ015	02/07/03	N/A	02/08/03
J00BT1	002 MS	W	03LVX035	02/07/03	N/A	02/08/03
J00BT1	002 MSD	W	03LVX035	02/07/03	N/A	02/08/03

LAB QC:

VBLKGC	MB1	W	03LVJ015	N/A	N/A	02/07/03
VBLKGC	MB1 BS	W	03LVJ015	N/A	N/A	02/07/03
03LTV007-LB1	LB1	W	03LVJ015	N/A	N/A	02/08/03
VBLKGD	MB1	W	03LVX035	N/A	N/A	02/08/03
VBLKGD	MB1 BS	W	03LVX035	N/A	N/A	02/08/03

ADDENDUM

This report provides Toxicity Characteristics Leaching Procedure (TCLP) information. Listed on the next page, the client identification on the ITCL labchron, "TCLP" represents the non-volatile leachate fraction and "TCLP LEACHATE" represents the Zero Headspace Extraction (ZHE) volatile leachate fraction. The "EXTR/PREP DATE" is the date the leachate preparation was initiated; the "ANALYSIS DATE" is the date the leachates were completed.

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B02-024

DATE RECEIVED: 02/06/03 LVL LOT # :0302L665

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00BT1						
TCLP LEACHATE	001	SO	03LTV007	02/05/03	02/06/03	02/07/03

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-024
LVL #: 0302L665
SDG/SAF #: H2065/B02-024

W.O. #: 11343-606-001-9999-00
Date Received: 02-06-2003

GC/MS VOLATILE-TCLP

One (1) leachate sample was generated on 02-07-2003 from a solid sample collected on 02-05-2003.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCLP Volatile target compounds on 02-07,08-2003.

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 a sample that met LvLI's sample acceptance policy.

2. The sample was analyzed within required holding time.

3. The sample was analyzed at a five-fold dilution due to the leachate matrix.

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. Internal standard area and retention time criteria were met.

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

By J. Michael Taylor
President
Lionville Laboratory Incorporated

02-12-03
Date

som\group\data\voa\tnu-hanford\0302t665.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 3 pages.

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

Report Date: 02/09/03 18:37

RFW Batch Number: **0302L665** Client: **TNU-HANFORD B02-024** #2065 Work Order: 11343606001 Page: 1a

	Cust ID:	J00BT1		J00BT1		J00BT1		VBLKGC		VBLKGC BS		VBLKGD	
Sample Information	RFW#:	002		002 MS		002 MSD		03LVJ015-MB1		03LVJ015-MB1		03LVX035-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		5.00		5.00		1.00		1.00		1.00	
	Units:	MG/L		MG/L		MG/L		MG/L		MG/L		MG/L	
Surrogate Recovery	Toluene-d8	95	%	95	%	97	%	98	%	99	%	95	%
	Bromofluorobenzene	84	%	100	%	99	%	89	%	88	%	92	%
	1,2-Dichloroethane-d4	115	%	97	%	100	%	97	%	118	%	98	%
Vinyl Chloride		0.050	U	97	%	97	%	0.010	U	113	%	0.010	U
1,1-Dichloroethene		0.025	U	101	%	101	%	0.005	U	102	%	0.005	U
Chloroform		0.025	U	105	%	103	%	0.005	U	110	%	0.005	U
1,2-Dichloroethane		0.025	U	98	%	100	%	0.005	U	114	%	0.005	U
2-Butanone		0.050	U	70	%	81	%	0.010	U	83	%	0.010	U
Carbon Tetrachloride		0.025	U	110	%	107	%	0.005	U	108	%	0.005	U
Trichloroethene		0.025	U	106	%	105	%	0.005	U	115	%	0.005	U
Benzene		0.025	U	94	%	93	%	0.005	U	103	%	0.005	U
Tetrachloroethene		0.010	J	95	%	95	%	0.005	U	95	%	0.005	U
Chlorobenzene		0.025	U	93	%	93	%	0.005	U	101	%	0.005	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

Report Date: 02/09/03 18:37

RFW Batch Number: 0302L665 Client: **TNU-HANFORD B02-024** Work Order: 11343606001 Page: 2a

	Cust ID:	**VBLKGD BS**		**LCHBLK**		
Sample Information	RFW#:	**03LVX035-MB1**		**03LTV007-LB1**		
	Matrix:	WATER		WATER		
	D.F.:	1.00		5.00		
	Units:	MG/L		MG/L		
Surrogate Recovery	Toluene-d8	96	%	96	%	
	Bromofluorobenzene	96	%	86	%	
	1,2-Dichloroethane-d4	100	%	116	%	
Vinyl Chloride		89	%	0.050	U	
1,1-Dichloroethene		96	%	0.025	U	
Chloroform		97	%	0.025	U	
1,2-Dichloroethane		92	%	0.025	U	
2-Butanone		70	%	0.050	U	
Carbon Tetrachloride		103	%	0.025	U	
Trichloroethene		98	%	0.025	U	
Benzene		87	%	0.025	U	
Tetrachloroethene		90	%	0.025	U	
Chlorobenzene		85	%	0.025	U	

*= Outside of EPA CLP QC limits.

0302L665

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LIONVILLE LABORATORY INC.

Client: TNU Hanford B02-024

Est. Final Proj. Sampling Date:

Project #: 11343-000-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlotte Johnson

QC: Spec. Del: Std. TAT: 30 day

Date Rec'd: 2-6-03 Date Due: 2/9/03

		A		B					C							
Refrigerator #		1		5					5							
#/Type Container	Liquid					Leachate					Leachate					
	Solid	1 aq		1 aq					1 aq							
Volume	Liquid															
	Solid	125		125					125							
Preservatives																

ANALYSES REQUESTED →

ORGANIC							INORG		
TCLP VOA	BNA	~~Pest~~ PCB	Herb	TCLP VOA			ICP Metal	CN	TCLP Metals

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ITCLV		CPCB		0624T			ITCLP		RCRA7W				
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	J00BT1	X	X	SO	2-5-03	0845	X		X					X					
	002	J00BT1 tclv of 001			L	*						✓									
	003	J00BT1 tclp of 001			L	*											✓				

Special Instructions: SAF # B02-024

DATE/REVISIONS:

* 1. See labchron.

2.

3.

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 7921 8526 7291

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec'd (Y) or N

Cooler Temp. 1.8 °C

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

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	2-6-03	0915

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-024-85	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH
Price Code: 9 I	Data Turnaround: 3 days or ASAP	Air Quality ☐	
Project Designation: 618-4 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1	SAF No.: B02-024	
Ice Chest No.: ERC-99-071	Field Logbook No.: EL-1395-7	COA: RG61842600	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A030127	Bill of Lading/Air Bill No.: OEE 057C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	none	cool 4°C	none							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	2							
Volume	~~60mL~~ 120	120 ml	120 ml	500 ml							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TCLP VOA 1311/8240A	PCBs 8080	GEA							

Sample No.	Matrix *	Sample Date	Sample Time											
J00BT1	OTHER SOLID	2-5-03	0845	X	X	X	X							
	OTHER SOLID													
	OTHER SOLID													
	OTHER SOLID													
	OTHER SOLID													

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers	Date/Time: Doug Bowers 2-5-03/1015	Received By/Stored In: S Jones 2503	Date/Time: 1015
Relinquished By/Removed From: S Jones 2503	Date/Time: 1015	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 2-6-03/0915	Received By/Stored In: D. Smith	Date/Time: 2-6-03/0915
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

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

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

BHI-EE-011 (03/01/2002)

CLASS	SAMPLE_LOCATION	SAMP_ITEM	SAMP_DATE_TIME	SAMP_NUM	CON_ID	CON_LONG_NAME	VALUE_R	ANAL_LA	BDG_NU
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	12587-46-1	Gross alpha	-0.428	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	12587-47-2	Gross beta	1.88	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14762-75-5	Carbon-14	6.85	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	10045-97-3	Cesium-137		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	TH-232	Thorium-232		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15585-10-1	Europium-154		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15262-20-1	Radium-228		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14683-23-9	Europium-152		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-238	Uranium-238		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14596-10-2	Americium-241		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14391-16-3	Europium-155		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14274-82-9	Thorium-228		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13982-63-3	Radium-226		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13966-00-2	Potassium-40		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	10198-40-0	Cobalt-60		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15117-96-1	Uranium-235		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13981-16-3	Plutonium-238	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	PU-239/240	Plutonium-239/240	-0.017	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	SR-RAD	Total beta radiostrontium	0.01	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-238	Uranium-238	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15117-96-1	Uranium-235	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-233/234	Uranium-233/234	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	12587-46-1	Gross alpha	0.715	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	12587-47-2	Gross beta	0.331	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14762-75-5	Carbon-14	19	pCi/m	J	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-238	Uranium-238		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	TH-232	Thorium-232		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15585-10-1	Europium-154		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15262-20-1	Radium-228		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	10045-97-3	Cesium-137		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14683-23-9	Europium-152		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14596-10-2	Americium-241		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14391-16-3	Europium-155		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14274-82-9	Thorium-228		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13982-63-3	Radium-226		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13966-00-2	Potassium-40		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	10198-40-0	Cobalt-60		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15117-96-1	Uranium-235		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13981-16-3	Plutonium-238	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	PU-239/240	Plutonium-239/240	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	SR-RAD	Total beta radiostrontium	0.067	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-238	Uranium-238	0.048	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15117-96-1	Uranium-235	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-233/234	Uranium-233/234	0.024	pCi/m	U	H1859

DATA TO BE USED FOR SAMPLE J00BT1

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 2.6.03

SAF# / SOW# / Release #: B02-024

Laboratory SDG #: 03021665

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ELC 99.071 / 1.8°C

Laboratory Sample Custodian:

Laboratory Project Manager:

FEB 2003

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-024 H2065

RFW LOT # :0302L665

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
J00BT1	001	SO	03LE0143	02/05/03	02/06/03	02/07/03	02/10/03
J00BT1	001 MS	SO	03LE0143	02/05/03	02/06/03	02/07/03	02/10/03
J00BT1	001 MSD	SO	03LE0143	02/05/03	02/06/03	02/07/03	02/10/03
LAB QC:							
PBLKLY	MB1	S	03LE0143	N/A	N/A	02/07/03	02/09/03
PBLKLY	MB1 BS	S	03LE0143	N/A	N/A	02/07/03	02/09/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-024
LVL #: 0302L665
SDG/SAF #: H2065/B02-024

W.O. #: 11343-606-001-9999-00
Date Received: 02-06-2003

PCB

One (1) solid sample was collected on 02-05-2003.

The sample and its associated QC samples were extracted on 02-07-2003 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 02-09,10-2003. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The required holding time for extraction and analysis has been met.
3. The sample and its associated QC samples received Sulfuric Acid and Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All obtainable surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The matrix spike recoveries were unobtainable due to the dilution required for the high concentration of target compounds.
8. The sample required a 100-fold dilution due to high concentration of target analytes. The reporting limits have been adjusted to reflect the necessary dilutions.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/18/03
Date

som\r:\group\data\pest\tnu hanford\0302-665.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/10/03 13:39

RFW Batch Number: **0302L665** Client: **TNU-HANFORD B02-024** Work Order: 11343606001 Page: 1

	Cust ID:	J00BT1	J00BT1	J00BT1	PBLKLY	PBLKLY BS
Sample Information	RFW#:	001	001 MS	001 MSD	03LE0143-MB1	03LE0143-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	100	100	100	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	D %	D %	D %	105 %	100 %
	Decachlorobiphenyl	D %	D %	D %	80 %	85 %
Aroclor-1016		3600 U	D %	D %	33 U	102 %
Aroclor-1221		7100 U	7100 U	7100 U	67 U	67 U
Aroclor-1232		3600 U	3600 U	3600 U	33 U	33 U
Aroclor-1242		3600 U	3600 U	3600 U	33 U	33 U
Aroclor-1248		3600 U	3600 U	3600 U	33 U	33 U
Aroclor-1254		11000	11000	11000	33 U	33 U
Aroclor-1260		3600 U	D %	D %	33 U	88 %

02-13-03

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

Lionville Laboratory Use Only

0302L665

Custody Transfer

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LIONVILLE LABORATORY INC.

Client: TNU Hanford B02-024

Est. Final Proj. Sampling Date:

Project #: 11343-600-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlette Johnson

QC: Spec. Del: Std. TAT: 30 day

Date Rec'd: 2-6-03 Date Due: 2/9/03

		A		B					C							
Refrigerator #		1		5					5							
#/Type Container	Liquid					Leachate					Leachate					
	Solid	1 aq		1 aq					1 aq							
Volume	Liquid															
	Solid	125		125					125							
Preservatives																

ANALYSES REQUESTED →

ORGANIC						INORG		
TCLP VOA	BNA	~~Pest~~ PCB	Herb	TCLP VOA		ICP Metal	CN	TCLP Metals

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ITCLV		CPCB		0624T			ITCLP		RCRA TCW				
S - Soil	001	J00BT1	X	X	SO	2-5-03	0845	X		X					X						
SE - Sediment	002	J00BT1 tclp of 001			L	*						✓									
SO - Solid	003	J00BT1 tclp of 001			L	*											✓				
SL - Sludge																					
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions: Saf # B02-024

PCB

DATE/REVISIONS:

* 1. See labchron.

2.

3.

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 7921 8526 7291

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. 1.8 °C

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

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	2-6-03	0915

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-024-85	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH
Price Code: 9 I	Data Turnaround: 3 days or ASAP	Air Quality ☐	
Project Designation: 618-4 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1		SAF No.: B02-024
Ice Chest No.: ERC-99-071	Field Logbook No.: EL-1395-7	COA: RG61842600	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A030127		Bill of Lading/Air Bill No.: DEE 05PC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4°C	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	2							
Volume	~~60mL~~ 120	120ml	120ml	500ml							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TCLP VOA 1311/8240A	PCBs 8020	GEA N503							

Sample No.	Matrix *	Sample Date	Sample Time										
J00BT1	OTHER SOLID	2-5-03	0845	X	X	X	X						
	OTHER SOLID												
	OTHER SOLID												
	OTHER SOLID												
	OTHER SOLID												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 2-5-03/1015	Received By/Stored In: S Jones N Jones 2503	Date/Time: 1015
Relinquished By/Removed From: S Jones N Jones 2503	Date/Time: 1015	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 2-6-03/0915	Received By/Stored In: [illegible]	Date/Time: 2-6-03/0915
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

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

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

BHI-EE-011 (03/01/2002)

CLASS	SAMPLE_LOCATION	SAMP_ITEM	SAMP_DATE_TIME	SAMP_NUM	CON_ID	CON_LONG_NAME	VALUE_R	ANAL_	LAB	SDG_NU
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	12587-46-1	Gross alpha	-0.428	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	12587-47-2	Gross beta	1.88	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14762-75-5	Carbon-14	6.85	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	10045-97-3	Cesium-137		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	TH-232	Thorium-232		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15585-10-1	Europium-154		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15262-20-1	Radium-228		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14683-23-9	Europium-152		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-238	Uranium-238		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14596-10-2	Americium-241		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14391-16-3	Europium-155		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	14274-82-9	Thorium-228		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13982-63-3	Radium-226		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13966-00-2	Potassium-40		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	10198-40-0	Cobalt-60		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15117-96-1	Uranium-235		pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	13981-16-3	Plutonium-238	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	PU-239/240	Plutonium-239/240	-0.017	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	SR-RAD	Total beta radiostrontium	0.01	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-238	Uranium-238	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	15117-96-1	Uranium-235	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	/21/2002 10:00:00 AM	B14VF3	U-233/234	Uranium-233/234	0	pCi/m	U	H1832
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	12587-46-1	Gross alpha	0.715	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	12587-47-2	Gross beta	0.331	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14762-75-5	Carbon-14	19	pCi/m	J	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-238	Uranium-238		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	TH-232	Thorium-232		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15585-10-1	Europium-154		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15262-20-1	Radium-228		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	10045-97-3	Cesium-137		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14683-23-9	Europium-152		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14596-10-2	Americium-241		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14391-16-3	Europium-155		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	14274-82-9	Thorium-228		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13982-63-3	Radium-226		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13966-00-2	Potassium-40		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	10198-40-0	Cobalt-60		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15117-96-1	Uranium-235		pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	13981-16-3	Plutonium-238	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	PU-239/240	Plutonium-239/240	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	SR-RAD	Total beta radiostrontium	0.067	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-238	Uranium-238	0.048	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	15117-96-1	Uranium-235	0	pCi/m	U	H1859
RAD	618-4 Burial Ground	OIL	8/1/2002 9:00:00 AM	J000X3	U-233/234	Uranium-233/234	0.024	pCi/m	U	H1859

DATA TO BE USED FOR SAMPLE J00BT1

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 2.6.03

SAF# / SOW# / Release #: B02-024

Laboratory SDG #: 03026665

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10. Shipment meets LvL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ELC 99.071 / 1.8°C

Laboratory Sample Custodian:

Laboratory Project Manager:

FEB 2003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-024 H2065

DATE RECEIVED: 02/06/03 LVL LOT # :0302L665

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00BT1						
TCLP	001	SO	03LTO016	02/05/03	02/06/03	02/07/03
SILVER, TCLP LEACHAT	003	W	03L0068	02/07/03	02/10/03	02/10/03
SILVER, TCLP LEACHAT	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
SILVER, TCLP LEACHAT	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
ARSENIC, TCLP LEACHA	003	W	03L0068	02/07/03	02/10/03	02/10/03
ARSENIC, TCLP LEACHA	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
ARSENIC, TCLP LEACHA	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
BARIUM, TCLP LEACHAT	003	W	03L0068	02/07/03	02/10/03	02/10/03
BARIUM, TCLP LEACHAT	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
BARIUM, TCLP LEACHAT	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
CADMIUM, TCLP LEACHA	003	W	03L0068	02/07/03	02/10/03	02/10/03
CADMIUM, TCLP LEACHA	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
CADMIUM, TCLP LEACHA	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
CHROMIUM, TCLP LEACH	003	W	03L0068	02/07/03	02/10/03	02/10/03
CHROMIUM, TCLP LEACH	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
CHROMIUM, TCLP LEACH	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
MERCURY, TCLP LEACHA	003	W	03C0027	02/07/03	02/11/03	02/11/03
MERCURY, TCLP LEACHA	003 REP	W	03C0027	02/07/03	02/11/03	02/11/03
MERCURY, TCLP LEACHA	003 MS	W	03C0027	02/07/03	02/11/03	02/11/03
LEAD, TCLP LEACHATE	003	W	03L0068	02/07/03	02/10/03	02/10/03
LEAD, TCLP LEACHATE	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
LEAD, TCLP LEACHATE	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03
SELENIUM, TCLP LEACH	003	W	03L0068	02/07/03	02/10/03	02/10/03
SELENIUM, TCLP LEACH	003 REP	W	03L0068	02/07/03	02/10/03	02/10/03
SELENIUM, TCLP LEACH	003 MS	W	03L0068	02/07/03	02/10/03	02/10/03

LAB QC:

SILVER LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
SILVER, TCLP LEACHAT	MB1	W	03L0068	N/A	02/10/03	02/10/03
SILVER, TCLP LEACHAT	MB2	W	03L0068	N/A	02/10/03	02/10/03
ARSENIC LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
ARSENIC, TCLP LEACHA	MB1	W	03L0068	N/A	02/10/03	02/10/03
ARSENIC, TCLP LEACHA	MB2	W	03L0068	N/A	02/10/03	02/10/03
BARIUM LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-024 H2065

DATE RECEIVED: 02/06/03 LVL LOT # :0302L665

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TCLP LEACHAT	MB1	W	03L0068	N/A	02/10/03	02/10/03
BARIUM, TCLP LEACHAT	MB2	W	03L0068	N/A	02/10/03	02/10/03
CADMIUM LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
CADMIUM, TCLP LEACHA	MB1	W	03L0068	N/A	02/10/03	02/10/03
CADMIUM, TCLP LEACHA	MB2	W	03L0068	N/A	02/10/03	02/10/03
CHROMIUM LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
CHROMIUM, TCLP LEACH	MB1	W	03L0068	N/A	02/10/03	02/10/03
CHROMIUM, TCLP LEACH	MB2	W	03L0068	N/A	02/10/03	02/10/03
MERCURY LABORATORY	LC1 BS	W	03C0027	N/A	02/11/03	02/11/03
MERCURY, TOTAL	MB1	W	03C0027	N/A	02/11/03	02/11/03
MERCURY, TCLP LEACHA	MB2	W	03C0027	N/A	02/11/03	02/11/03
LEAD LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
LEAD, TCLP LEACHATE	MB1	W	03L0068	N/A	02/10/03	02/10/03
LEAD, TCLP LEACHATE	MB2	W	03L0068	N/A	02/10/03	02/10/03
SELENIUM LABORATORY	LC1 BS	W	03L0068	N/A	02/10/03	02/10/03
SELENIUM, TCLP LEACH	MB1	W	03L0068	N/A	02/10/03	02/10/03
SELENIUM, TCLP LEACH	MB2	W	03L0068	N/A	02/10/03	02/10/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-024
LVL#: 0302L665
SDG/SAF#: H2065/B02-024

W.O.#: 11343-606-001-9999-00
Date Received: 02-06-03

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 TCLP leachate sample.

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

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

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

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), MB value less than 5% of the RCRA limit, 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 duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from sample J00BT1 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-14-03
Date

gmb/m02-665

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Lot#: ~~0302L666~~ 0302L665

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A /3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	/6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	/6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	/6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	/6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	/6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	/7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	/6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	/6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/13/03

CLIENT: TNUHANFORD B02-024 H2065

LVL LOT #: 0302L665

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J00BT1	Silver, TCLP Leachate	3.3	u	UG/L	3.3	1.0
		Arsenic, TCLP Leachate	39.1	u	UG/L	39.1	1.0
		Barium, TCLP Leachate	414		UG/L	3.7	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	5.3	u	UG/L	5.3	1.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Lead, TCLP Leachate	34.9	u	UG/L	34.9	1.0
		Selenium, TCLP Leachate	70.3	u	UG/L	70.3	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/13/03

CLIENT: TNUHANFORD B02-024 H2065 LVL LOT #: 0302L665

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0068-MB1	Silver, TCLP Leachate	3.3	u	UG/L	3.3	1.0
		Arsenic, TCLP Leachate	39.1	u	UG/L	39.1	1.0
		Barium, TCLP Leachate	3.7	u	UG/L	3.7	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	5.3	u	UG/L	5.3	1.0
		Lead, TCLP Leachate	38.5		UG/L	34.9	1.0
		Selenium, TCLP Leachate	70.3	u	UG/L	70.3	1.0
BLANK2	03L0068-MB2	Silver, TCLP Leachate	3.3	u	UG/L	3.3	1.0
		Arsenic, TCLP Leachate	39.1	u	UG/L	39.1	1.0
		Barium, TCLP Leachate	3.7	u	UG/L	3.7	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	5.3	u	UG/L	5.3	1.0
		Lead, TCLP Leachate	34.9	u	UG/L	34.9	1.0
		Selenium, TCLP Leachate	70.3	u	UG/L	70.3	1.0
BLANK1	03C0027-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	03C0027-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/13/03

CLIENT: TNUHANFORD B02-024 H2065 LVL LOT #: 0302L665

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	J00BT1	Silver, TCLP Leachate	4330	3.3 u	5000	86.5	1.0
		Arsenic, TCLP Leachate	4670	39.1 u	5000	93.5	1.0
		Barium, TCLP Leachate	98800	414	100000	98.4	1.0
		Cadmium, TCLP Leachate	821	4.8 u	1000	82.1	1.0
		Chromium, TCLP Leachat	4400	5.3 u	5000	88.0	1.0
		Mercury, TCLP Leachate	176	1.0 u	200	87.9	50.0
		Lead, TCLP Leachate	4200	34.9 u	5000	83.9	1.0
		Selenium, TCLP Leachat	909	70.3 u	1000	90.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/13/03

CLIENT: TNUHANFORD B02-024 H2065 LVL LOT #: 0302L665

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	J00BT1	Silver, TCLP Leachate	3.3 u	3.3 u	NC	1.0
		Arsenic, TCLP Leachate	39.1 u	39.1 u	NC	1.0
		Barium, TCLP Leachate	414	414	0.097	1.0
		Cadmium, TCLP Leachate	4.8 u	4.8 u	NC	1.0
		Chromium, TCLP Leachate	5.3 u	5.3 u	NC	1.0
		Mercury, TCLP Leachate	1.0 u	1.0 u	NC	10.0
		Lead, TCLP Leachate	34.9 u	34.9 u	NC	1.0
		Selenium, TCLP Leachate	70.3 u	70.3 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/13/03

CLIENT: TNUHANFORD B02-024 H2065 LVL LOT #: 0302L665

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0068-LC1	Silver, LCS	473	500	UG/L	94.7
		Arsenic, LCS	9620	10000	UG/L	96.2
		Barium, LCS	5000	5000	UG/L	100
		Cadmium, LCS	230	250	UG/L	92.0
		Chromium, LCS	501	500	UG/L	100.1
		Lead, LCS	2340	2500	UG/L	93.4
		Selenium, LCS	9470	10000	UG/L	94.7
LCS1	03C0027-LC1	Mercury, LCS	4.9	5.0	UG/L	98.7

Lionville Laboratory Use Only

0302L665

Custody Transfer Record

LVLI LIONVILLE LABORATORY INC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B02-024

Est. Final Proj. Sampling Date:

Project #: 11343-6000-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Arlotte Johnson

QC: Spec. Del: Std. TAT: 30 day

Date Rec'd: 2-6-03 Date Due: 2/9/03

		A		B					C							
Refrigerator #		1		5					5							
#/Type Container	Liquid					Leachate					Leachate					
	Solid	1 qg		1 qg					1 qg							
Volume	Liquid															
	Solid	125		125					125							
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		TCLP VOA	BNA	Pest/PCB	Herb	TCLP VOA			TCLP Metal	CN	TCLP Metals					
		Lionville Laboratory Use Only														
		ITCLV		CPCB		0624T			ITCLP		RCRATCLM					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ITCLV		CPCB		0624T			ITCLP		RCRATCLM				
001	J00BT1	X	X	SO	2-5-03	0845	X		X					X						
002	J00BT1 tclp of 001			L	*						✓									
003	J00BT1 tclp of 001			L	*											✓				

Special Instructions: Saf # B02-024

DATE/REVISIONS:
* 1. See labchron.
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 7921 8526 7291
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N
Cooler Temp. 1.8 °C

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

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	2-6-03	0915

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

12

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-024-85	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH
Price Code: 9 I	Data Turnaround: 3 days or ASAP		
Project Designation: 618-4 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1	SAF No.: B02-024	Air Quality ☐
Ice Chest No.: ERC-99-071	Field Logbook No.: EL-1395-7	COA: RG61842600	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A030127	Bill of Lading/Air Bill No.: DEE 05PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	none	cool	none							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	2							
Volume	~~60mL~~ 120	120ml	120ml	500ml							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TCLP VOA 1311/8240A	PCBs 8080	GEA ~~AN~~ 503							
Sample No.	Matrix *	Sample Date	Sample Time								
J00B T1	OTHER SOLID	2-5-03	0845	X	X	X	X				
	OTHER SOLID										
	OTHER SOLID										
	OTHER SOLID										
	OTHER SOLID										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Doug Bowers	2-5-03/1015	Received By/Stored In: S JONES	2503 1015
Relinquished By/Removed From	S JONES	2503 1015	Received By/Stored In: FED EX	
Relinquished By/Removed From	FED EX	2-6-03/0915	Received By/Stored In: D Smith	2-6-03/0915
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

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

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

BHI-EE-011 (03/01/2002)

13

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 2-6-03

SAF# / SOW# / Release #: B02-024

Laboratory SDG #: 03026665

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

Elc 99-071 / 1.8°

Laboratory Sample Custodian:

Laboratory Project Manager:

EBERLINE
SERVICES

February 15, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R3-02-029-7759, SDG H2065

Dear Ms. Kessner:

Enclosed is the data report for one other solid sample designated under SAF No. B02-024 received at Eberline Services on February 7, 2003. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

FEB 2003

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 H2065 was composed of one other solid sample designated under SAF No. B02-024 with a Project Designation of: 618-4 Burial Ground – Anomalous Waste (Solids).

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on February 10 and 11, 2003.

2.0 ANALYSIS NOTES

2.1 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

2/15/3

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 H2065

SDG	7759
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2065

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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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	02/11/03

SDG 7759
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2065

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 02/11/03

SDG 7759
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2065

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 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

SDG 7759
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2065

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00BT1	300-FF-1	SOLID		R302029-01	B02-024	B02-024-85	02/05/03 08:45
Method Blank		SOLID		R302029-03	B02-024		
Lab Control Sample		SOLID		R302029-02	B02-024		
Duplicate (R302029-01)	300-FF-1	SOLID		R302029-04	B02-024		02/05/03 08:45

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

SDG 7759
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2065

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
7759	B02-024-85	J00BT1	SOLID	100.0	1479 g		02/07/03	2	R302029-01	7759-001
		Method Blank	SOLID						R302029-03	7759-003
		Lab Control Sample	SOLID						R302029-02	7759-002
		Duplicate (R302029-01)	SOLID	100.0	1479 g		02/07/03	2	R302029-04	7759-004

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

SDG 7759
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2065

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7032-174	15.0	1			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

SDG 7759
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2065

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
J00BT1			R302029-01	7759-001	GAM		02/10/03	02/10/03	MCM	Gamma Scan
300-FF-1		SOLID	02/05/03							
B02-024-85	B02-024		02/07/03							
Method Blank			R302029-03	7759-003	GAM		02/10/03	02/10/03	MCM	Gamma Scan
		SOLID								
	B02-024									
Lab Control Sample			R302029-02	7759-002	GAM		02/10/03	02/11/03	MCM	Gamma Scan
		SOLID								
	B02-024									
Duplicate (R302029-01)			R302029-04	7759-004	GAM		02/10/03	02/10/03	MCM	Gamma Scan
300-FF-1		SOLID	02/05/03							
	B02-024		02/07/03							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
GAM	B02-024	Gamma Scan	GAMMA_GS	1			1	1	1	4
TOTALS				1			1	1	1	4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

R302029-03 Method Blank

METHOD BLANK

SDG	7759	Client/Case no	Hanford	SDG H2065	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R302029-03	Client sample id	Method Blank		
Dept sample id	7759-003	Material/Matrix		SOLID	
		SAF No	B02-024		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	U		0.33		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	U		0.039		U	GAM
Radium 228	15262-20-1	U		0.083		U	GAM
Europium 152	14683-23-9	U		0.039	0.10	U	GAM
Europium 154	15585-10-1	U		0.041	0.10	U	GAM
Europium 155	14391-16-3	U		0.047	0.10	U	GAM
Thorium 228	14274-82-9	U		0.021		U	GAM
Thorium 232	TH-232	U		0.083		U	GAM
Uranium 235	15117-96-1	U		0.070		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

618-4 Burial Ground-Anomalous Waste

QC-BLANK 43841

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

R302029-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7759
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2065
Contract No. 630

Lab sample id R302029-02
Dept sample id 7759-002

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B02-024

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Cobalt 60	0.258	0.018	0.012	0.050		GAM	0.269	0.011	96	75-125	80-120
Cesium 137	0.271	0.016	0.013	0.10		GAM	0.274	0.011	99	75-125	80-120

618-4 Burial Ground-Anomalous Waste

QC-LCS 43840

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

R302029-04

J00BT1

DUPLICATE

SDG	7759			Client/Case no	Hanford SDG H2065
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R302029-04	Lab sample id	R302029-01	Client sample id	J00BT1
Dept sample id	7759-004	Dept sample id	7759-001	Location/Matrix	300-FF-1 SOLID
		Received	02/07/03	Collected/Weight	02/05/03 08:45 1479 g
% solids	100.0	% solids	100.0	Custody/SAF No	B02-024-85 B02-024

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Potassium 40	6.68	0.46	0.25			GAM	9.88	0.88	0.48		39	37
Cobalt 60	U		0.026	0.050	U	GAM	U		0.035	U	-	
Cesium 137	U		0.024	0.10	U	GAM	U		0.040	U	-	
Radium 226	0.252	0.048	0.044			GAM	0.392	0.077	0.076		43	53
Radium 228	0.427	0.10	0.092			GAM	0.376	0.16	0.19		13	77
Europium 152	U		0.084	0.10	U	GAM	U		0.10	U	-	
Europium 154	U		0.092	0.10	U	GAM	U		0.16	U	-	
Europium 155	U		0.093	0.10	U	GAM	U		0.10	U	-	
Thorium 228	0.502	0.061	0.051			GAM	0.463	0.044	0.046		8	40
Thorium 232	0.427	0.10	0.092			GAM	0.376	0.16	0.19		13	77
Uranium 235	U		0.13		U	GAM	U		0.16	U	-	
Uranium 238	U		3.2		U	GAM	U		5.5	U	-	
Americium 241	U		0.14		U	GAM	U		0.14	U	-	

618-4 Burial Ground-Anomalous Waste

QC-DUP#1 43842

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

R302029-01 J00BT1

DATA SHEET

SDG	7759	Client/Case no	Hanford	SDG H2065	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R302029-01	Client sample id	J00BT1		
Dept sample id	7759-001	Location/Matrix	300-FF-1	SOLID	
Received	02/07/03	Collected/Weight	02/05/03 08:45	1479 g	
% solids	100.0	Custody/SAF No	B02-024-85	B02-024	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	9.88	0.88	0.48			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.392	0.077	0.076			GAM
Radium 228	15262-20-1	0.376	0.16	0.19			GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	0.463	0.044	0.046			GAM
Thorium 232	TH-232	0.376	0.16	0.19			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		5.5		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

618-4 Burial Ground-Anomalous Waste

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/11/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2065

Test GAM Matrix SOLID
SDG 7759
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2065

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7032-174								
J00BT1	R302029-01			7759-001	U		U	
BLK (QC ID=43841)	R302029-03			7759-003	U		U	
LCS (QC ID=43840)	R302029-02			7759-002	ok		ok	
Duplicate (R302029-01)	R302029-04			7759-004	-	U	-	U
Nominal values and limits from method 618-4 Burial Ground-Anomalous Waste				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7032-174 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 174																
J00BT1	R302029-01			0.30	855					103			5	02/07/03	02/10	02,03,00
BLK (QC ID=43841)	R302029-03			0.11	855					103				02/07/03	02/10	MB,05,00
LCS (QC ID=43840)	R302029-02			0.012	855					738				02/07/03	02/10	01,03,00
Duplicate (R302029-01) (QC ID=43842)	R302029-04			0.22	855					120			5	02/07/03	02/10	02,04,00
Nominal values and limits from method				0.050	855					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.16 ± 0.25
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/03

SDG 7759
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2065

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.

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Version Ver 1.0
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Contact Melissa C. Mannion

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Client Hanford
Contract No. 630
Case no SDG H2065

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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Version Ver 1.0
Form DVD-RG
Version 3.06
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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2065

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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REPORT GUIDE

Client Hanford
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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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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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GUIDE, cont.

Client Hanford
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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.

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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2065

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.

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REPORT GUIDE

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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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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.

SDG 7759
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

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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.

SDG 7759
Contact Melissa C. Mannion

REPORT GUIDE

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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'

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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.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-024-85	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH
Project Designation: 618-4 Burial Ground - Anomalous Waste (Solids)	Sampling Location: 300-FF-1 H2065 (7759)		SAF No.: B02-024
Ice Chest No.: ERC 96 072	Field Logbook No.: EL-1395-7	COA: RG61842600	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A030145		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9 I — Data Turnaround: 3 days or ASAP

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	none	cool	none							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	2							
Volume	~~60mL~~ 120	120ml	120ml	500ml							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TCLP VOA 1311/8240A	PCBs 8080	GEA							

Sample No.	Matrix *	Sample Date	Sample Time										
J00BT1	OTHER SOLID	2-5-03	0845	X	X	X	X						
	OTHER SOLID												
	OTHER SOLID												
	OTHER SOLID												
	OTHER SOLID												

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers Doug Bowers	2-5-03/1015	Received By/Stored In: S J GALE	2503 1015
Relinquished By/Removed From: S J GALE	2503 1015	Received By/Stored In: FED EX	
Relinquished By/Removed From		Received By/Stored In: Lori C Johnson	1000 2-7-03
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470

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

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

BHI-EE-011 (03/01/2002)

EBERLINE SERVICES **ANALYTICAL SERVICES GROUP**

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BHI Date/Time received 1000 2-7-03

CoC No. B02-024-85

Container I.D. No. ERC 96-072 Requested TAT (Days) 3 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 2 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 2-7-03 Time: 1000

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____