RECEIVED
MAR 26 2002
EDMC

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/28/01 LVL LOT # :0108L684

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MH4						
% SOLIDS	001	S	01L%S114	08/23/01	08/30/01	08/31/01
% SOLIDS	001 REP	S	01L%S114	08/23/01	08/30/01	08/31/01
CHLORIDE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
CHLORIDE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
CHLORIDE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
FLUORIDE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
FLUORIDE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
FLUORIDE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRITE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRITE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRITE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRATE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRATE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRATE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
TOTAL CYANIDE	001	S	01LC082	08/23/01	08/31/01	08/31/01
TOTAL CYANIDE	001 REP	S	01LC084	08/23/01	09/07/01	09/07/01
TOTAL CYANIDE	001 MS	S	01LC084	08/23/01	09/07/01	09/07/01
PHOSPHATE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
PHOSPHATE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
PHOSPHATE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
CHROMIUM VI	001	S	01LVI075	08/23/01	09/18/01	09/18/01
CHROMIUM VI	001 REP	S	01LVI075	08/23/01	09/18/01	09/18/01
CHROMIUM VI	001 MS	S	01LVI075	08/23/01	09/18/01	09/18/01
CHROMIUM VI	001 MSD	S	01LVI075	08/23/01	09/18/01	09/18/01
SULFATE BY IC	001	S	01LICB62	08/23/01	09/21/01	09/21/01
SULFATE BY IC	001 REP	S	01LICB62	08/23/01	09/21/01	09/21/01
SULFATE BY IC	001 MS	S	01LICB62	08/23/01	09/21/01	09/21/01
NITRATE NITRITE	001	S	01LN3050	08/23/01	09/24/01	09/24/01
NITRATE NITRITE	001 REP	S	01LN3050	08/23/01	09/24/01	09/24/01
NITRATE NITRITE	001 MS	S	01LN3050	08/23/01	09/24/01	09/24/01
AMMONIA	001	S	01LAM043	08/23/01	09/13/01	09/14/01
TOTAL ORGANIC CARBON	001	S	01LTZ025	08/23/01	09/17/01	09/18/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ025	08/23/01	09/17/01	09/18/01
TOTAL ORGANIC CARBON	001 MS	S	01LTZ025	08/23/01	09/17/01	09/18/01
PH	001	S	01LPH059	08/23/01	08/31/01	08/31/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/28/01 LVL LOT # :0108L684

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	001 REP	S	01LPH059	08/23/01	08/31/01	08/31/01
B12MH7						
% SOLIDS	002	S	01L%S114	08/22/01	08/30/01	08/31/01
CHLORIDE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
FLUORIDE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
NITRITE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
NITRATE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
TOTAL CYANIDE	002	S	01LC082	08/22/01	08/31/01	08/31/01
PHOSPHATE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
CHROMIUM VI	002	S	01LVI075	08/22/01	09/18/01	09/18/01
SULFATE BY IC	002	S	01LICB62	08/22/01	09/21/01	09/21/01
NITRATE NITRITE	002	S	01LN3050	08/22/01	09/24/01	09/24/01
AMMONIA	002	S	01LAM043	08/22/01	09/13/01	09/14/01
AMMONIA	002 REP	S	01LAM043	08/22/01	09/13/01	09/14/01
AMMONIA	002 MS	S	01LAM043	08/22/01	09/13/01	09/14/01
TOTAL ORGANIC CARBON	002	S	01LTZ025	08/22/01	09/17/01	09/18/01
PH	002	S	01LPH059	08/22/01	08/31/01	08/31/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
CHLORIDE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
FLUORIDE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
FLUORIDE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
NITRITE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
NITRITE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
NITRATE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
NITRATE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
TOTAL CYANIDE	LCS L	S	01LC082	N/A	08/31/01	08/31/01
TOTAL CYANIDE	LCS L	S	01LC082	N/A	08/31/01	08/31/01
TOTAL CYANIDE	MB1	S	01LC082	N/A	08/31/01	08/31/01
TOTAL CYANIDE	LCS L	S	01LC084	N/A	09/07/01	09/07/01
TOTAL CYANIDE	LCS L	S	01LC084	N/A	09/07/01	09/07/01
TOTAL CYANIDE	MB1	S	01LC084	N/A	09/07/01	09/07/01
PHOSPHATE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
PHOSPHATE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/28/01 LVL LOT # :0108L684

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BS	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BSD	S	01LVI075	N/A	09/18/01	09/18/01
SULFATE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
SULFATE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
NITRATE NITRITE	MB1	S	01LN3050	N/A	09/24/01	09/24/01
NITRATE NITRITE	MB1 BS	S	01LN3050	N/A	09/24/01	09/24/01
AMMONIA	MB1	S	01LAM043	N/A	09/13/01	09/14/01
AMMONIA	MB1 BS	S	01LAM043	N/A	09/13/01	09/14/01
AMMONIA	MB1 BSD	S	01LAM043	N/A	09/13/01	09/14/01
TOTAL ORGANIC CARBON	MB1	~~W~~S	01LTZ025	N/A	09/17/01	09/18/01
TOTAL ORGANIC CARBON	MB1 BS	~~W~~S	01LTZ025	N/A	09/17/01	09/18/01

9-26-01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1476
LVL#: 0108L684

W.O.#: 11343-606-001-9999-00
Date Received: 08-28-01

INORGANIC NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of matrix spike and duplicate for Total Cyanide sample B12MH4.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of LCS 01LVI072 for Insoluble Chromium VI that was above the 80-120% control limits. The duplicate LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.

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

8. The replicate analyses were within the 20% RPD control limit.

9. Results for solid samples are reported on a dry weight basis.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-26-01
Date

njp\i07-684

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

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B / 9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		✓ 9060	✓ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0 (mod.)

Other: Nitrite, Phosphate, Sulfate **Method**

Nitrate Nitrite EPA 353.2 (mod.)

Ammonia EPA 350.3

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MH4	% Solids	94.4		%	0.01	1.0
		Chloride by IC	12.8		MG/KG	2.6	2.0
		Fluoride by IC	5.3	u	MG/KG	5.3	2.0
		Nitrite by IC	2.65	u	MG/KG	2.65	2.0
		Nitrate by IC	65.3		MG/KG	2.65	2.0
		Cyanide, Total	0.44	u	MG/KG	0.44	1.0
		Phosphate by IC	3.0		MG/KG	2.6	2.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	38.3		MG/KG	2.6	2.0
		Nitrate Nitrite	15.6		MG/KG	1.0	5.0
		Ammonia, as N	2.4	u	MG/KG	2.4	1.0
		Total Organic Carbon	900		MG/KG	174	1.0
		pH	8.7		SOIL PH	0.01	1.0
-002	B12MH7	% Solids	94.3		%	0.01	1.0
		Chloride by IC	11.1		MG/KG	2.7	2.0
		Fluoride by IC	5.3	u	MG/KG	5.3	2.0
		Nitrite by IC	2.65	u	MG/KG	2.65	2.0
		Nitrate by IC	77.3		MG/KG	2.65	2.0
		Cyanide, Total	0.37	u	MG/KG	0.37	1.0
		Phosphate by IC	3.3		MG/KG	2.7	2.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	67.5		MG/KG	2.7	2.0
		Nitrate Nitrite	19.4		MG/KG	1.0	5.0
		Ammonia, as N	2.5	u	MG/KG	2.5	1.0
		Total Organic Carbon	1370		MG/KG	167	1.0
		pH	8.7		SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 *LVL LOT #: 0108L684*

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICB62-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	01LC082-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK1	01LC084-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI075-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3050-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAM043-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LTZ025-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MH4	Chloride by IC	59.9	12.8	53.0	89.1	2.0
		Fluoride by IC	114	2.0	106	105.6	2.0
		Nitrite by IC	53.0	2.65u	53.0	100.2	2.0
		Nitrate by IC	194	65.3	132	97.5	5.0
		Cyanide, Total	4.67	0.44u	5.15	90.7	1.0
		Phosphate by IC	54.8	3.0	53.0	97.8	2.0
		Soluble Chromium VI	4.7	0.42u	4.2	102.9	1.0
		Insoluble Chromium VI	1420	0.42u	1300	109.7	100
		Sulfate by IC	94.3	38.3	53.0	105.7	2.0
		Nitrate Nitrite	42.1	15.6	26.0	101.8	5.0
		Total Organic Carbon	3910	899	3510	85.9	1.0
-002	B12MH7	Ammonia, as N	132	2.5 u	107	123.8	1.0
BLANK10	01LICB62-MB1	Chloride by IC	24.9	1.2 u	25.0	99.5	1.0
		Fluoride by IC	54.1	2.5 u	50.0	108.2	1.0
		Nitrite by IC	24.2	1.25u	25.0	96.7	1.0
		Nitrate by IC	24.8	1.25u	25.0	99.3	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.3	1.0
		Sulfate by IC	24.2	1.2 u	25.0	96.9	1.0
BLANK10	01LVI075-MB1	Soluble Chromium VI	4.1	0.40u	4.0	102.0	1.0
		Insoluble Chromium VI	1440	0.40u	1160	124.3	100
BLANK10	01LN3050-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.0	1.0
BLANK10	01LAM043-MB1	Ammonia, as N	102	2.5 u	100	102.5	1.0
		Ammonia, as N MSD	104	2.5 u	100	103.8	1.0
BLANK10	01LTZ025-MB1	Total Organic Carbon	391	20.0 u	400	97.8	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM043-MB1	Ammonia, as N	102.5	103.8	1.2

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MH4	% Solids	94.4	94.3	0.13	1.0
		Chloride by IC	12.8	12.3	3.7	2.0
		Fluoride by IC	5.3 u	5.3 u	NC	2.0
		Nitrite by IC	2.65u	2.65u	NC	2.0
		Nitrate by IC	65.3	64.7	0.85	2.0
		Cyanide, Total	0.44u	0.51u	NC	1.0
		Phosphate by IC	3.0	2.8	7.5	2.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Sulfate by IC	38.3	38.2	0.36	2.0
		Nitrate Nitrite	15.6	17.2	9.4	5.0
		Total Organic Carbon	899	778	14.4	1.0
		pH	8.7	8.7	0.6	1.0
-002REP	B12MH7	Ammonia, as N	2.5 u	2.3 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC082-LCS1	Cyanide, Total LCS	1.69	2.0	MG/KG	84.4
LCSS2	01LC082-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	100.7
LCSS1	01LC084-LCS1	Cyanide, Total LCS	1.86	2.0	MG/KG	93.2
LCSS2	01LC084-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	100.9

Lionville Laboratory Use Only
01081684

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

13

Client: TMU-Hanford B01-058
Est. Final Proj. Sampling Date:
Project #: 11343-006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Std Del: Std TAT: 30 day
Date Rec'd: 8-28-01 Date Due: 9-27-01

		A	B		C	D
Refrigerator #		5	5		5	5
#/Type Container	Liquid					
	Solid	1Ag	1Ag		1Ag	1Ag
Volume	Liquid					
	Solid	60	500		120	1L
Preservatives		-	-		-	-
ANALYSES REQUESTED →	ORGANIC: VOA, BNA, Pest/PCB, Herb		INORG: Metal	CN		
Lionville Laboratory Use Only		ICP/6	Met①		MHGTO	Inorg①

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
001	B12M1H4			S	8-28-01	0045
002	↓ 7			↓	8-28-01	2350

Special Instructions: Saf B01-058
Run Matrix QC

DATE/REVISIONS:
Met① 1. Cd, Cr, Cu, Ni, Ag, Pb
Inorg① 2. TCCL, TCFL, TCNO3, TCNO2, TCPOH, TCSO4,
1
3. TNH3N, TN3N2, TCNTO, TOCT, TPH
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 123579541685 1
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. 5.1 °C

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

Relinquished by	Received by	Date	Time
FedEx	TKappel	8-28-01	0900

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-224	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SM1-463	Field Logbook No.: EL-1518-1 — COA B20TW2A44C ~~B20TW2674C~~ KT 8/23/01	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA DSW 08/15/01	Offsite Property No.: AR10438	Bill of Lading/Air Bill No.: 4235 7454-6851	

POSSIBLE SAMPLE HAZARDS/REMARKS
FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/23/01. Collector not available to relenquish samples on 8/27/01 for shipment. KT 8.27.01

SAMPLE ANALYSIS											
Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - ~~8260B~~ (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
B12MH4	SOIL	8-23-01	0045	X	X	X	X					B12M17	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D WATSON/Trent	08/23/01 0915	REF-1B	08/23/01 0915
Kyle 1B 3728 Ship	8/27/01 0900	K Thorp	8.27.01 0900
K Thorp	8.27.01 0900	FedEx	
FedEx	8/28/01 0900	Thorp	8/28/01 0900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~ 10/04/01

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

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

BHI-EE-011 (10/99)

14

15

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-227	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SM1 463	Field Logbook No.: EL-1518-1 — COA B20TW2A44C ~~B20TW2074C~~ AT	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA pjw 08/15/01	Offsite Property No.: A810438 8/22/01	Bill of Lading/Air Bill No.: 4235954-6851	

POSSIBLE SAMPLE HAZARDS/REMARKS

FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8 23 01.
Collector not available to relenquish samples on 8/22/01 for shipment RT

8-27-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL) OTW 08/22/01	See item (3) in Special Instructions.	See item (4) in Special Instructions.			Tit to	

Sample No.	Matrix *	Sample Date	Sample Time										
B12MH7	SOIL	08/22/01	2350	X	X	X	X					B12MJ6	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWATSON/	08/23/01 0915	REF. 1B	08/23/01 0915
Ref 1B	8.27.01 0900	RT Thorne	8.27.01
RT Thorne	8.27.01 0900	FEDEX	
FEDEX	8.28.01 0900	TKopel	8.28.01 0900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 8-28-01 0900

SDG#: 01081684

Work Order Number: — SAF# B01-058

Shipping Container ID: SML-463 Chain of Custody # B01-058-224227

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.1°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 8
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ✓ in good condition ____leaking
   ____broken ____have air bubbles

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

Sample Custodian/Laboratory: Tappel / LULI Date: 8-28-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/25/01 LVL LOT # :0108L677

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MH5						
% SOLIDS	001	S	01L%S113	08/22/01	08/29/01	08/30/01
% SOLIDS	001 REP	S	01L%S113	08/22/01	08/29/01	08/30/01
CHLORIDE BY IC	001	S	01LICD60	08/22/01	09/12/01	09/12/01
CHLORIDE BY IC	001 REP	S	01LICD60	08/22/01	09/12/01	09/12/01
CHLORIDE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
FLUORIDE BY IC	001	S	01LICD60	08/22/01	09/12/01	09/12/01
FLUORIDE BY IC	001 REP	S	01LICD60	08/22/01	09/12/01	09/12/01
FLUORIDE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
NITRITE BY IC	001	S	01LICE60	08/22/01	09/12/01	09/12/01
NITRITE BY IC	001 REP	S	01LICE60	08/22/01	09/12/01	09/12/01
NITRITE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
NITRATE BY IC	001	S	01LICE60	08/22/01	09/12/01	09/12/01
NITRATE BY IC	001 REP	S	01LICE60	08/22/01	09/12/01	09/12/01
NITRATE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
TOTAL CYANIDE	001	S	01LC082	08/22/01	08/31/01	08/31/01
PHOSPHATE BY IC	001	S	01LICD60	08/22/01	09/12/01	09/12/01
PHOSPHATE BY IC	001 REP	S	01LICD60	08/22/01	09/12/01	09/12/01
PHOSPHATE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
CHROMIUM VI	001	S	01LVI075	08/22/01	09/18/01	09/18/01
CHROMIUM VI	001 REP	S	01LVI075	08/22/01	09/18/01	09/18/01
CHROMIUM VI	001 MS	S	01LVI075	08/22/01	09/18/01	09/18/01
CHROMIUM VI	001 MSD	S	01LVI075	08/22/01	09/18/01	09/18/01
SULFATE BY IC	001	S	01LICD60	08/22/01	09/12/01	09/12/01
SULFATE BY IC	001 REP	S	01LICD60	08/22/01	09/12/01	09/12/01
SULFATE BY IC	001 MS	S	01LIC061	08/22/01	09/19/01	09/19/01
NITRATE NITRITE	001	S	01LN3050	08/22/01	09/24/01	09/24/01
NITRATE NITRITE	001 REP	S	01LN3050	08/22/01	09/24/01	09/24/01
NITRATE NITRITE	001 MS	S	01LN3050	08/22/01	09/24/01	09/24/01
AMMONIA	001	S	01LAM043	08/22/01	09/13/01	09/14/01
AMMONIA	001 REP	S	01LAM043	08/22/01	09/13/01	09/14/01
AMMONIA	001 MS	S	01LAM043	08/22/01	09/13/01	09/14/01
TOTAL ORGANIC CARBON	001	S	01LTZ025	08/22/01	09/17/01	09/18/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ025	08/22/01	09/17/01	09/18/01
TOTAL ORGANIC CARBON	001 MS	S	01LTZ025	08/22/01	09/17/01	09/18/01
PH	001	S	01LPH059	08/22/01	08/31/01	08/31/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/25/01 LVL LOT # :0108L677

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	001 REP	S	01LPH059	08/22/01	08/31/01	08/31/01
B12MH6						
% SOLIDS	002	S	01L%S113	08/22/01	08/29/01	08/30/01
CHLORIDE BY IC	002	S	01LICD60	08/22/01	09/12/01	09/12/01
FLUORIDE BY IC	002	S	01LICD60	08/22/01	09/12/01	09/12/01
NITRITE BY IC	002	S	01LICE60	08/22/01	09/12/01	09/12/01
NITRATE BY IC	002	S	01LICE60	08/22/01	09/12/01	09/12/01
TOTAL CYANIDE	002	S	01LC082	08/22/01	08/31/01	08/31/01
TOTAL CYANIDE	002 REP	S	01LC082	08/22/01	08/31/01	08/31/01
TOTAL CYANIDE	002 MS	S	01LC082	08/22/01	08/31/01	08/31/01
PHOSPHATE BY IC	002	S	01LICD60	08/22/01	09/12/01	09/12/01
CHROMIUM VI	002	S	01LVI075	08/22/01	09/18/01	09/18/01
SULFATE BY IC	002	S	01LICD60	08/22/01	09/12/01	09/12/01
NITRATE NITRITE	002	S	01LN3050	08/22/01	09/24/01	09/24/01
AMMONIA	002	S	01LAM043	08/22/01	09/13/01	09/14/01
TOTAL ORGANIC CARBON	002	S	01LTZ025	08/22/01	09/17/01	09/18/01
PH	002	S	01LPH059	08/22/01	08/31/01	08/31/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICD60	N/A	09/12/01	09/12/01
CHLORIDE BY IC	MB1 BS	S	01LICD60	N/A	09/12/01	09/12/01
CHLORIDE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
CHLORIDE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01
FLUORIDE BY IC	MB1	S	01LICD60	N/A	09/12/01	09/12/01
FLUORIDE BY IC	MB1 BS	S	01LICD60	N/A	09/12/01	09/12/01
FLUORIDE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
FLUORIDE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01
NITRITE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRITE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
NITRITE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
NITRITE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01
NITRATE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
NITRATE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/25/01 LVL LOT # :0108L677

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	LCS L	S	01LC082	N/A	08/31/01	08/31/01
TOTAL CYANIDE	LCS L	S	01LC082	N/A	08/31/01	08/31/01
TOTAL CYANIDE	MB1	S	01LC082	N/A	08/31/01	08/31/01
PHOSPHATE BY IC	MB1	S	01LICD60	N/A	09/12/01	09/12/01
PHOSPHATE BY IC	MB1 BS	S	01LICD60	N/A	09/12/01	09/12/01
PHOSPHATE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
PHOSPHATE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01
CHROMIUM VI	MB1	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BS	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BSD	S	01LVI075	N/A	09/18/01	09/18/01
SULFATE BY IC	MB1	S	01LICD60	N/A	09/12/01	09/12/01
SULFATE BY IC	MB1 BS	S	01LICD60	N/A	09/12/01	09/12/01
SULFATE BY IC	MB1	S	01LIC061	N/A	09/19/01	09/19/01
SULFATE BY IC	MB1 BS	S	01LIC061	N/A	09/19/01	09/19/01
NITRATE NITRITE	MB1	S	01LN3050	N/A	09/24/01	09/24/01
NITRATE NITRITE	MB1 BS	S	01LN3050	N/A	09/24/01	09/24/01
AMMONIA	MB1	S	01LAM043	N/A	09/13/01	09/14/01
AMMONIA	MB1 BS	S	01LAM043	N/A	09/13/01	09/14/01
AMMONIA	MB1 BSD	S	01LAM043	N/A	09/13/01	09/14/01
TOTAL ORGANIC CARBON	MB1	~~W~~S	01LTZ025	N/A	09/17/01	09/18/01
TOTAL ORGANIC CARBON	MB1 BS	~~W~~S	01LTZ025	N/A	09/17/01	09/18/01

JSP 9-26-01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1476
LVL#: 0108L677

W.O.#: 11343-606-001-9999-00
Date Received: 08-25-01

INORGANIC NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of LCS 01LVI072 for Insoluble Chromium VI that was above the 80-120% control limits. The duplicate LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.

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

8. The replicate analyses were within the 20% RPD control limit.

9. Results for solid samples are reported on a dry weight basis.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-26-01
Date

njp\i07-677

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		✓ 9060	✓ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0(mod.)

Other: Nitrite, Phosphate, Sulfate **Method**

Nitrate Nitrite EPA 353.2 (mod.)

Ammonia EPA 350.3

L-WI-034/B-01/01

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
LC = Laboratory Control Sample.
NC = Not calculated.

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MH5	% Solids	94.1	%	0.01	1.0
		Chloride by IC	6.5	MG/KG	2.7	2.0
		Fluoride by IC	2.7 u	MG/KG	2.7	2.0
		Nitrite by IC	2.66 u	MG/KG	2.66	2.0
		Nitrate by IC	110	MG/KG	6.64	5.0
		Cyanide, Total	0.45 u	MG/KG	0.45	1.0
		Phosphate by IC	7.3	MG/KG	2.7	2.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	45.9	MG/KG	2.7	2.0
		Nitrate Nitrite	24.9	MG/KG	0.98	5.0
		Ammonia, as N	2.5 u	MG/KG	2.5	1.0
		Total Organic Carbon	1050	MG/KG	200	1.0
		pH	9.0	SOIL PH	0.01	1.0
-002	B12MH6	% Solids	91.0	%	0.01	1.0
		Chloride by IC	9.0	MG/KG	2.7	2.0
		Fluoride by IC	2.7 u	MG/KG	2.7	2.0
		Nitrite by IC	2.75 u	MG/KG	2.75	2.0
		Nitrate by IC	193	MG/KG	6.87	5.0
		Cyanide, Total	0.48 u	MG/KG	0.48	1.0
		Phosphate by IC	3.1	MG/KG	2.7	2.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	185	MG/KG	2.7	2.0
		Nitrate Nitrite	46.2	MG/KG	2.2	10.0
		Ammonia, as N	21.3	MG/KG	2.4	1.0
		Total Organic Carbon	3850	MG/KG	192	1.0
		pH	8.3	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICD60-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	01LIC061-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	01LICE60-MB1	Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
BLANK1	01LC082-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI075-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3050-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAM043-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LTZ025-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MH5	Chloride by IC	125	6.5	133	89.3	5.0
		Fluoride by IC	275	2.1	266	102.7	5.0
		Nitrite by IC	129	2.66u	133	97.0	5.0
		Nitrate by IC	255	110	133	108.8	5.0
		Phosphate by IC	134	7.3	133	95.7	5.0
		Soluble Chromium VI	4.4	0.42u	4.2	102.0	1.0
		Insoluble Chromium VI	1590	0.42u	1300	122.1	100
		Sulfate by IC	180	45.9	133	100.6	5.0
		Nitrate Nitrite	71.8	24.9	50.3	93.1	10.0
		Ammonia, as N	118	2.5 u	98.6	120.0	1.0
		Total Organic Carbon	4580	1050	3920	89.9	1.0
-002	B12MH6	Cyanide, Total	4.58	0.48u	4.81	95.3	1.0
BLANK10	01LICD60-MB1	Chloride by IC	23.3	1.2 u	25.0	93.4	1.0
		Fluoride by IC	52.7	1.2 u	50.0	105.4	1.0
		Phosphate by IC	25.8	1.2 u	25.0	103.3	1.0
		Sulfate by IC	23.6	1.2 u	25.0	94.3	1.0
BLANK10	01LIC061-MB1	Chloride by IC	24.0	1.2 u	25.0	95.8	1.0
		Fluoride by IC	54.2	2.5 u	50.0	108.5	1.0
		Nitrite by IC	23.7	1.25u	25.0	95.0	1.0
		Nitrate by IC	24.7	1.25u	25.0	98.6	1.0
		Phosphate by IC	25.7	1.2 u	25.0	102.9	1.0
		Sulfate by IC	24.2	1.2 u	25.0	96.8	1.0
BLANK10	01LICE60-MB1	Nitrite by IC	22.6	1.25u	25.0	90.4	1.0
		Nitrate by IC	24.1	1.25u	25.0	96.5	1.0
BLANK10	01LVI075-MB1	Soluble Chromium VI	4.1	0.40u	4.0	102.0	1.0
		Insoluble Chromium VI	1440	0.40u	1160	124.3	100
BLANK10	01LN3050-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.0	1.0
BLANK10	01LAM043-MB1	Ammonia, as N	102	2.5 u	100	102.5	1.0
		Ammonia, as N MSD	104	2.5 u	100	103.8	1.0
BLANK10	01LTZ025-MB1	Total Organic Carbon	391	20.0 u	400	97.8	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM043-MB1	Ammonia, as N	102.5	103.8	1.2

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MH5	% Solids	94.1	94.6	0.47	1.0
		Chloride by IC	6.5	7.4	13.3	2.0
		Fluoride by IC	2.7 u	2.7 u	NC	2.0
		Nitrite by IC	2.66u	2.66u	NC	2.0
		Nitrate by IC	110	103	6.9	5.0
		Phosphate by IC	7.3	7.0	4.0	2.0
		Chromium VI	0.42u	0.43	NC	1.0
		Sulfate by IC	45.9	38.0	18.9	2.0
		Nitrate Nitrite	24.9	22.7	9.2	5.0
		Ammonia, as N	2.5 u	2.7 u	NC	1.0
		Total Organic Carbon	1050	949	10.4	1.0
		pH	9.0	9.0	0.3	1.0
-002REP	B12MH6	Cyanide, Total	0.48u	0.51u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC082-LCS1	Cyanide, Total LCS	1.69	2.0	MG/KG	84.4
LCSS2	01LC082-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	100.7

Lionville Laboratory Use Only

01081677

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

Client [redacted] Tru-Hanford SAF # B01-058

Est. Final Proj. Sampling Date 8-27-01

Project # 11343-6060-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 8-25-01 Date Due 9-24-01

		A	B	C	D
Refrigerator #					
#Type Container	Liquid				
	Solid	W			
Volume	Liquid				
	Solid	S			
Preservatives					

ANALYSES REQUESTED →

ORGANIC				INORG				
VOA	BNA	Pest/PCB	Herb	Metal	CN	[illegible]	[illegible]	[illegible]

Lionville Laboratory Use Only

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	Metal(1)		Inorg(1)	ICP/9	MHGTO
001	B12 MH5			S	8-22-01	0425	1		1	1	1
002	1 6			L		0530	1		1	1	1

Special Instructions: Saf B01-058
Run Matrix QC

DATE/REVISIONS:
Met(1) 1. Cd, Cr, Cu, Ni, Ag, Pb
Inorg(1) 2. ICCL, ICFL, IC003, IC002, ICPON, ICSO4,
1
3. IN1130, IN3N2, ICN10, IOCT, IPH
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # Dec Betal
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. 4.5 °C

Relinquished by	Received by	Date	Time
Fed Ex	V. Bressanly	8/25/01	0920

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 795 4 6770

0108L61 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-225	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: ERC99-039	Field Logbook No.: EL-1518-1 — COA: B20TW2444 ~~B20TW2740~~ AT	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA DSW 08/15/01	Offsite Property No.: A010344 8/22/01	Bill of Lading/Air Bill No.: 42357954-6770	

POSSIBLE SAMPLE HAZARDS/REMARKS
500 COUNTS ABV ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/22/01.
Collector not available to relinquish samples on 8/24/01 for shipment. RT 8.24.01

Preservation	Cool 4C C	Cool 4C A	Cool 4C D	Cool 4C B	Cool 4C	Cool 4C	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B12MH5	SOIL	08/22/01	0425	X	X	X	X					TIETO	B12MJ9

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D.Swaison/[signature]	08/22/01 0730	REF. 1B 3728	08/22/01 0730
Ref. 1B 3728	8.24.01 0900	R Thore	8.24.01 0900
R.T. Thore	8.24.01 0900	FED EX	
Fed Ex	8/25/01 0920	[signature]	8/25/01 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy~~ {Cesium-137, Cobalt-60, ~~Europium-152, Europium-154, Europium-155~~}; ~~Gamma Spec - Add-on (Radium-226, Radium-228)~~; ~~Isotopic Plutonium~~; ~~Isotopic Thorium (Thorium-232)~~; ~~Americium-241; Carbon-14; Neptunium-237~~; Nickel-63; Strontium-89,90 -- Total Sr; ~~Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

10/24/01 DSW

Matrix *
S=Soil
SD=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

CE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-226	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Cheat No.: ERA 99-039	Field Logbook No.: EL-1518-1 — COA: B20TW2A44K ~~B20TW267AC~~	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA DSW 08/15/01	Offsite Property No.: A 010344 8/22/01	Bill of Lading/Air Bill No.: 42351954 - 6770	

POSSIBLE SAMPLE HAZARDS/REMARKS
650 COUNTS B/G ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8 22 01.
Collector not available to relinquish samples on 8 24 01 for shipment. RT 8.24.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									Tie to
B12MH6	SOIL	8-22-01	0530	X	X	X	X					B12MJ5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSW 11304 TRENT	08/22/01 0730	REF. 1B	08/22/01 0730
Ref 1B 3728	8.24.01 0900	R.L. Thorne	8.24.01 0900
R.L. Thorne	8.24.01 0900	FED EX	
Fed Ex	8/25/01 0920	Keith Hennon	8/25/01 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-On {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 8/25/01 0920

SDG#: 01081677

Work Order Number: ERC99-039 SAF# B01-058

Shipping Container ID: _____ Chain of Custody # B01-058-225

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.5
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 8
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Lab Herrowsky Laboratory Inc. Fitzgerald Date: 8/25/01

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/25/01 LVL LOT # :0108L677

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MH5						
SILVER, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
SILVER, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
SILVER, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
CADMIUM, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
CADMIUM, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
CADMIUM, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
CHROMIUM, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
CHROMIUM, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
CHROMIUM, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
COPPER, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
COPPER, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
COPPER, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
MERCURY, TOTAL	001	S	01C0276	08/22/01	09/12/01	09/12/01
MERCURY, TOTAL	001 REP	S	01C0276	08/22/01	09/12/01	09/12/01
MERCURY, TOTAL	001 MS	S	01C0276	08/22/01	09/12/01	09/12/01
NICKEL, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
NICKEL, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
NICKEL, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
LEAD, TOTAL	001	S	01L0562	08/22/01	09/08/01	09/11/01
LEAD, TOTAL	001 REP	S	01L0562	08/22/01	09/08/01	09/11/01
LEAD, TOTAL	001 MS	S	01L0562	08/22/01	09/08/01	09/11/01
B12MH6						
SILVER, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01
CADMIUM, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01
CHROMIUM, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01
COPPER, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01
MERCURY, TOTAL	002	S	01C0276	08/22/01	09/12/01	09/12/01
NICKEL, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01
LEAD, TOTAL	002	S	01L0562	08/22/01	09/08/01	09/11/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/25/01 LVL LOT # :0108L677

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
CADMIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
CADMIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
CHROMIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
CHROMIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
COPPER LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
COPPER, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MERCURY LABORATORY	LC1 BS	S	01C0276	N/A	09/12/01	09/12/01
MERCURY, TOTAL	MB1	S	01C0276	N/A	09/12/01	09/12/01
NICKEL LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
NICKEL, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
LEAD LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
LEAD, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0108L677
SDG/SAF#: H1476/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 08-25-01

METALS CASE NARRATIVE

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

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

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

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

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

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

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

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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.

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
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-24-01
Date

gmb/m08-677

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#: 01084677

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:_____

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 09/17/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MH5	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	12.9	MG/KG	0.15	1.0
		Copper, Total	12.8	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.9	MG/KG	0.18	1.0
		Lead, Total	5.9	MG/KG	0.25	1.0
-002	B12MH6	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	13.5	MG/KG	0.15	1.0
		Copper, Total	13.7	MG/KG	0.05	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	13.7	MG/KG	0.18	1.0
		Lead, Total	6.9	MG/KG	0.26	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0562-MB1	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.14 u	MG/KG	0.14	1.0
		Copper, Total	0.05	MG/KG	0.05	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.24 u	MG/KG	0.24	1.0
BLANK1	01C0276-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/17/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MH5	Silver, Total	4.6	0.05u	5.2	88.5	1.0
		Cadmium, Total	5.1	0.03u	5.2	98.1	1.0
		Chromium, Total	33.4	12.9	20.8	98.6	1.0
		Copper, Total	37.0	12.8	26.1	92.7	1.0
		Mercury, Total	0.16	0.02u	0.16	103.8	1.0
		Nickel, Total	61.8	10.9	52.1	97.7	1.0
		Lead, Total	57.4	5.9	52.1	98.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/17/01

CLIENT: TNUHANFORD B01-058 H1476 *LVL LOT #: 0108L677*

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MH5	Silver, Total	0.05u	0.05u	NC	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	12.9	13.5	4.5	1.0
		Copper, Total	12.8	13.2	3.1	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Nickel, Total	10.9	11.6	6.2	1.0
		Lead, Total	5.9	5.9	0.00	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/17/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L677

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0562-LC1	Silver, LCS	47.4	50.0	MG/KG	94.8
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Chromium, LCS	49.1	50.0	MG/KG	98.2
		Copper, LCS	123	125	MG/KG	98.1
		Nickel, LCS	195	200	MG/KG	97.5
		Lead, LCS	241	250	MG/KG	96.2
LCS1	01C0276-LC1	Mercury, LCS	2.4	2.5	MG/KG	94.8

Lionville Laboratory Use Only

0108L677

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client [redacted] Tny-Hanford SAF # B01-058

Est. Final Rcd. Sampling Date

Project # 1121-5-[redacted]-B01-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager BJ

QC Std QC DM Std TAT 30 day

Date Rec'd 8-25-01 Date Due 9-24-01

Refrigerator #																		
#/Type Container	Liquid									A		B	C	D				
	Solid									1A		1A	1A	1A				
Volume	Liquid																	
	Solid									30g		30g	60	120				
Preservatives																		
ANALYSES REQUESTED →		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN								
		Lionville Laboratory Use Only																
									Mrt(1)		Inorg(1)	ICPAO	MHGTO					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	B12MH5			S	8-25-01	0925
002	" 6			L		0530

Special Instructions: Saf B01-058

Run Matrix QC

DATE/REVISIONS:

Mrt(1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg(1) 2. ICCl, ICFl, ICNO3, ICNO2, ICPON, ICSOH,

1 3. INH3N, IN3N2, ICNTO, IOCT, IPH

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # Del Betal

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. 4.5 °C

Relinquished by	Received by	Date	Time
Ed Ex	[signature]	8/25/01	0920

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 6770

0108L671

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-225	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. / Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N / Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC99-039	Field Logbook No.: EL-1518-1 / COA: B20TW2AAK ~~B20TW2674G~~ AT	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA DSW 08/15/01	Offsite Property No.: A010344 8/22/01	Bill of Lading/Air Bill No.: 42357954-6770	

POSSIBLE SAMPLE HAZARDS/REMARKS
500 COUNTS ABV ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/22/01.
Collector not available to relinquish samples on 8/24/01 for shipment. RT 8.24.01

SAMPLE ANALYSIS

Preservation	Cool 4C C	Cool 4C A	Cool 4C D	Cool 4C B	Cool 4C	Cool 4C	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL) DSW 8-25	See item (3) in Special Instructions. RT 8/24	See item (4) in Special Instructions. Lab Use MSA			

Sample No.	Matrix *	Sample Date	Sample Time										
B12MH5	SOIL	08/22/01	0425	X	X	X	X					TETO	B12MJA

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D.Swaton/[illegible]	08/22/01 0730	REF. 1B 3728	08/22/01 0730
Ref. 1B 3728	8.24.01 0900	R Thore	8.24.01 0900
R.T. Thore	8.24.01 0900	FED EX	
Fed Ex	8/25/01 0920	[illegible] Hernandez	8/25/01 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - 8015/TPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

10/FEB/01 MSA

Matrix *
S=Soil
SD=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

CE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-226	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: ERA 99-039	Field Logbook No.: EL-1518-1	COA: B20TW2A44K ~~B20TW2G7AC~~	Method of Shipment: Fed EX
Shipped To: TMA/RECRA DSW 8/21/01	Offsite Property No.: A 010344 8/22/01	Bill of Lading/Air Bill No.: 4235 1954 - 6770	

POSSIBLE SAMPLE HAZARDS/REMARKS
650 COUNTS B/G ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/22/01.
Collector not available to relinquish samples on 8/24/01 for shipment. RT 8.24.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								Tie to
B12MH6	SOIL	8-22-01	0530	X	X	X	X				B12M15

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSW 4134 / TRENT	08/22/01 0730	REF. 1B	08/22/01 0730
R. of 1B 3728	8.24.01 0900	R. Thorer	8.24.01 0900
R. Thorer	8.24.01 0900	FED EX	
FED EX	8/25/01 0920	Rick Hennig	8/25/01 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-On {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - HD; Isotopic Uranium~~

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

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/28/01 LVL LOT # :0108L684

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MH4						
SILVER, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
SILVER, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
SILVER, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
CADMIUM, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
CADMIUM, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
CADMIUM, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
CHROMIUM, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
CHROMIUM, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
CHROMIUM, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
COPPER, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
COPPER, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
COPPER, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
MERCURY, TOTAL	001	S	01C0276	08/23/01	09/12/01	09/12/01
MERCURY, TOTAL	001 REP	S	01C0276	08/23/01	09/12/01	09/12/01
MERCURY, TOTAL	001 MS	S	01C0276	08/23/01	09/12/01	09/12/01
NICKEL, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
NICKEL, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
NICKEL, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
LEAD, TOTAL	001	S	01L0599	08/23/01	09/20/01	09/22/01
LEAD, TOTAL	001 REP	S	01L0599	08/23/01	09/20/01	09/22/01
LEAD, TOTAL	001 MS	S	01L0599	08/23/01	09/20/01	09/22/01
B12MH7						
SILVER, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01
CADMIUM, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01
CHROMIUM, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01
COPPER, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01
MERCURY, TOTAL	002	S	01C0276	08/22/01	09/12/01	09/12/01
NICKEL, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01
LEAD, TOTAL	002	S	01L0599	08/22/01	09/20/01	09/22/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1476

DATE RECEIVED: 08/28/01 LVL LOT # :0108L684

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01
CADMIUM LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01
CADMIUM, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01
CHROMIUM LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01
CHROMIUM, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01
COPPER LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01
COPPER, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01
MERCURY LABORATORY	LC1 BS	S	01C0276	N/A	09/12/01	09/12/01
MERCURY, TOTAL	MB1	S	01C0276	N/A	09/12/01	09/12/01
NICKEL LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01
NICKEL, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01
LEAD LABORATORY	LC1 BS	S	01L0599	N/A	09/20/01	09/22/01
LEAD, TOTAL	MB1	S	01L0599	N/A	09/20/01	09/22/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0108L684
SDG/SAF#: H1476/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 08-28-01

METALS CASE NARRATIVE

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

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

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

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

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

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

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

11. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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.

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
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-27-01
Date

gmb/m08-684

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#: 0108L684

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 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MH4	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	12.4	MG/KG	0.15	1.0
		Copper, Total	15.0	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.1	MG/KG	0.18	1.0
		Lead, Total	10.0	MG/KG	0.25	1.0
-002	B12MH7	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Chromium, Total	14.0	MG/KG	0.15	1.0
		Copper, Total	13.7	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.7	MG/KG	0.18	1.0
		Lead, Total	23.3	MG/KG	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0599-MB1	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.14 u	MG/KG	0.14	1.0
		Copper, Total	0.20	MG/KG	0.05	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.24 u	MG/KG	0.24	1.0
BLANK1	01C0276-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476

LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MH4	Silver, Total	5.0	0.05u	5.3	94.3	1.0
		Cadmium, Total	4.9	0.07	5.3	91.2	1.0
		Chromium, Total	31.7	12.4	21.2	91.0	1.0
		Copper, Total	38.9	15.0	26.5	90.2	1.0
		Mercury, Total	0.16	0.02u	0.16	103.2	1.0
		Nickel, Total	57.6	10.1	52.9	89.8	1.0
		Lead, Total	54.7	10.0	52.9	84.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MH4	Silver, Total	0.05u	0.05u	NC	1.0
		Cadmium, Total	0.07	0.10	39.0	1.0
		Chromium, Total	12.4	18.2	37.9	1.0
		Copper, Total	15.0	13.9	7.6	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Nickel, Total	10.1	18.7	59.7	1.0
		Lead, Total	10.0	6.8	38.1	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/25/01

CLIENT: TNUHANFORD B01-058 H1476 LVL LOT #: 0108L684

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0599-LC1	Silver, LCS	48.2	50.0	MG/KG	96.4
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	50.7	50.0	MG/KG	101.4
		Copper, LCS	124	125	MG/KG	99.3
		Nickel, LCS	195	200	MG/KG	97.5
		Lead, LCS	244	250	MG/KG	97.5
LCS1	01C0276-LC1	Mercury, LCS	2.4	2.5	MG/KG	94.8

Lionville Laboratory Use Only
0108L684

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford Bol-058
Est. Final Proj. Sampling Date:
Project #: 11343-C006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-28-01 Date Due: 9-27-01

		A	B		C	D
Refrigerator #		5	5		5	5
#/Type Container	Liquid					
	Solid	1AG	1AG		1AG	1AG
Volume	Liquid					
	Solid	60	500		120	1L
Preservatives		-	-		-	-
ANALYSES REQUESTED →	ORGANIC: VOA, BNA, Pest/PCB, Herb		INORG: Metal, CN			
Lionville Laboratory Use Only		ICP/6	Met①		MHG TO	Inorg①

MATRIX CODES: S - Soil; SE - Sediment; SG - 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	ICP/6	Met①		MHG TO	Inorg①
001	B12M4H4			S	8-28-01	0045	✓	✓		✓	✓
002	" "			"	8-28-01	1350	✓	✓		✓	✓

Special Instructions: Saf Bol-058
Run Matrix QC

DATE/REVISIONS:
Met① 1. Cd, Cr, Cu, Ni, Ag, Pb
Inorg① 2. TCCL, TCFL, TCNO3, TCNO2, TCPO4, TCSO4,
" 3. TNH3N, TN3N2, TCNTO, TOCT, TPH
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	Thoppel	8-28-01	0900

Relinquished by	Received by	Date	Time

COMPOSITE

ORIGINAL

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

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 423579541685 1
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. 5.1 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-224	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SM1-463	Field Logbook No.: EL-1518-1	COA B20TW2A44C B20TW2634C DT 8/23/01	Method of Shipment: Fed EX
Shipped To: ~~PHR~~/RECRA DT 8/15/01	Offsite Property No.: AD10438	Bill of Lading/Air Bill No.: 4235 7454 6851	

POSSIBLE SAMPLE HAZARDS/REMARKS
FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/23/01. Collector not available to relenquish samples on 8/27/01 for shipment. FT 8-27-01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B12MH4	SOIL	8-23-01	0045	X	X	X	X					B12MH7

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B Watson/Bhat	08/23/01 0915	REF-1B	08/23/01 0915
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 1B	3728 8-27-01 0900	[illegible]	8-27-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8-27-01 0900	[illegible]	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	8-28-01 0900	[illegible]	8-28-01 0900
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) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma-Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

DS 08/30/01

Matrix *
S=Soil
SD=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

(0/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-227	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SM1 463	Field Logbook No.: EL-1518-1	COA B20TW2A44C B20TW2G74C AT	Method of Shipment: Fed EX
Shipped To: TMA/RECRA DSW 08/15/01	Offsite Property No.: A610438 8/22/01	Bill of Lading/Air Bill No.: 4235 7954-6851	

POSSIBLE SAMPLE HAZARDS/REMARKS

FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8 30 01. Collector not available to relenquish samples on 8/22/01 for shipment RT

8-27-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL) DTW 08/22/01	See item (3) in Special Instructions.	See item (4) in Special Instructions.			Tir to	

Sample No.	Matrix *	Sample Date	Sample Time										
B12MH7	SOIL	08/22/01	2350	X	X	X	X					B12M16	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/	08/23/01 0915	REF. 1B	08/23/01 0915
Ref. 1B	8.27.01 0900	RTHorne	8.27.01 0900
RTHorne	8.27.01 0900	FEDEX	
FedEx	8-28-01 0900	TKopel	8-28-01 0900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH Diesel Range - WTPH-D~~
(4) ~~Gamma Spectrometry {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

DSW 08/23/01

Matrix *: S=Soil, SD=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

H1476

EBERLINE SERVICES

November 12, 2001

Ms. Joan Kessner
Bechtel Hanford Inc.
3550 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R1-08-137-7066 SDG H1476

Dear Ms. Kessner:

Enclosed is the data report for four solid samples designated under SAF No. B01-058 received at Eberline Services on August 27, 2001. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

NOV 2001 RECEIVED

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 H1476 was composed of four solid (soil) samples designated under SAF No. B01-058 with a Project Designation of: 200-TW-1 & -2 - Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 6 and 10, 2001.

2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium Analyses

Due to low yields (less than 20%) the Pu samples had to be reanalyzed with new QC samples. No problems were encountered during the course of the reanalyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Carbon-14 Analyses

The C-14 LCS percent recovery (75%) was below the 3σ limits (87 to 113%) and the laboratory protocol limits (80 to 120%), but within BHI's limits (70 to 130%). No other problems were encountered during the course of the analyses.

2.10 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.11 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.12 Tritium Analyses

The matrix spike percent recovery (77%) was below the 3σ limits (87 to 113%) and the laboratory protocol limits (80 to 120%), but within BHI's limits (60 to 140%). No other 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

11/12/01

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 H1476

SDG	7066
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H1476

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

About this section	1
Sample Summaries	3
Prep Batch Summary	5
Work Summary	6
Method Blanks	10
Lab Control Samples	13
Duplicates	15
Matrix Spikes	18
Data Sheets	19
Method Summaries	27
Report Guides	43
End of Section	57

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	11/10/01

SDG 7066
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1476

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 TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/10/01

SDG 7066
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1476

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 TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1476

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12MH4	B-7A/200 E	SOLID		R108137-03	B01-058	B01-058-224	08/23/01 00:45
B12MH5	B-7A/200 E	SOLID		R108137-01	B01-058	B01-058-225	08/22/01 04:25
B12MH6	B-7A/200 E	SOLID		R108137-02	B01-058	B01-058-225	08/22/01 05:30
B12MH7	B-7A/200 E	SOLID		R108137-04	B01-058	B01-058-224	08/22/01 23:40
Method Blank		SOLID		R108137-06	B01-058		
Method Blank		SOLID		R108137-10	B01-058		
Lab Control Sample		SOLID		R108137-05	B01-058		
Lab Control Sample		SOLID		R108137-09	B01-058		
Duplicate (R108137-01)	B-7A/200 E	SOLID		R108137-07	B01-058		08/22/01 04:25
Duplicate (R108137-01)	B-7A/200 E	SOLID		R108137-11	B01-058		08/22/01 04:25
Spike (R108137-01)	B-7A/200 E	SOLID		R108137-08	B01-058		08/22/01 04:25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1476

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
7066	B01-058-224	B12MH4	SOLID	94.5	1168 g		08/28/01	5	R108137-03	7066-003
		B12MH7	SOLID	95.2	1171 g		08/28/01	6	R108137-04	7066-004
	B01-058-225	B12MH5	SOLID	94.2	1218 g		08/27/01	5	R108137-01	7066-001
		B12MH6	SOLID	91.2	1097 g		08/27/01	5	R108137-02	7066-002
		Method Blank	SOLID						R108137-06	7066-006
		Method Blank	SOLID						R108137-10	7066-010
		Lab Control Sample	SOLID						R108137-05	7066-005
		Lab Control Sample	SOLID						R108137-09	7066-009
		Duplicate (R108137-01)	SOLID	94.2	1218 g		08/27/01	5	R108137-07	7066-007
		Duplicate (R108137-01)	SOLID	94.2	1218 g		08/27/01	5	R108137-11	7066-011
		Spike (R108137-01)	SOLID	94.2	1218 g		08/27/01	5	R108137-08	7066-008

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1476

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7008-047	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	7008-047	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7008-047	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7008-047	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7008-047	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7008-047	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7008-047	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7008-047	15.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	7008-047	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7008-047	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	7008-047	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7008-047	10.0	4			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1476

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MH4			R108137-03	7066-003	AM		10/27/01	11/06/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	08/23/01	7066-003	C		10/15/01	11/06/01	MCM	Carbon 14 in Soil
B01-058-224	B01-058		08/28/01	7066-003	GAM		11/07/01	11/10/01	MCM	Gamma Scan
				7066-003	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-003	NI_L		10/06/01	11/06/01	MCM	Nickel 63 in Soil
				7066-003	NP		10/20/01	11/06/01	MCM	Neptunium in Soil
				7066-003	PU	A1	10/31/01	11/06/01	MCM	Plutonium, Isotopic in Solids
				7066-003	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-003	TC		10/09/01	11/06/01	MCM	Technetium 99 in Soil
				7066-003	TH		10/18/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-003	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-003	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
B12MH5			R108137-01	7066-001	AM		10/18/01	11/06/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	08/22/01	7066-001	C		10/14/01	11/06/01	MCM	Carbon 14 in Soil
B01-058-225	B01-058		08/27/01	7066-001	GAM		11/05/01	11/10/01	MCM	Gamma Scan
				7066-001	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-001	NI_L		10/06/01	11/06/01	MCM	Nickel 63 in Soil
				7066-001	NP		10/23/01	11/06/01	MCM	Neptunium in Soil
				7066-001	PU	A1	10/31/01	11/06/01	MCM	Plutonium, Isotopic in Solids
				7066-001	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-001	TC		10/09/01	11/06/01	MCM	Technetium 99 in Soil
				7066-001	TH		11/07/01	11/10/01	MCM	Thorium, Isotopic in Soil
				7066-001	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-001	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
B12MH6			R108137-02	7066-002	AM		10/18/01	11/06/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	08/22/01	7066-002	C		10/14/01	11/06/01	MCM	Carbon 14 in Soil
B01-058-225	B01-058		08/27/01	7066-002	GAM		10/29/01	11/10/01	MCM	Gamma Scan
				7066-002	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-002	NI_L		10/06/01	11/06/01	MCM	Nickel 63 in Soil
				7066-002	NP		10/18/01	11/06/01	MCM	Neptunium in Soil
				7066-002	PU	A1	10/31/01	11/06/01	MCM	Plutonium, Isotopic in Solids
				7066-002	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-002	TC		10/16/01	11/06/01	MCM	Technetium 99 in Soil
				7066-002	TH		10/10/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-002	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-002	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1476

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MH7			R108137-04	7066-004	AM		10/27/01	11/06/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	08/22/01	7066-004	C		10/15/01	11/06/01	MCM	Carbon 14 in Soil
B01-058-224	B01-058		08/28/01	7066-004	GAM		10/30/01	11/10/01	MCM	Gamma Scan
				7066-004	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-004	NI_L		10/06/01	11/06/01	MCM	Nickel 63 in Soil
				7066-004	NP		10/23/01	11/06/01	MCM	Neptunium in Soil
				7066-004	PU	A1	10/31/01	11/06/01	MCM	Plutonium, Isotopic in Solids
				7066-004	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-004	TC		10/09/01	11/06/01	MCM	Technetium 99 in Soil
				7066-004	TH		10/30/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-004	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-004	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
Method Blank			R108137-06	7066-006	AM		10/18/01	11/06/01	MCM	Americium 241 in Soil
		SOLID		7066-006	C		10/14/01	11/06/01	MCM	Carbon 14 in Soil
	B01-058			7066-006	GAM		10/31/01	11/10/01	MCM	Gamma Scan
				7066-006	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-006	NI_L		10/07/01	11/06/01	MCM	Nickel 63 in Soil
				7066-006	NP		10/23/01	11/06/01	MCM	Neptunium in Soil
				7066-006	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-006	TC		10/09/01	11/06/01	MCM	Technetium 99 in Soil
				7066-006	TH		10/18/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-006	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-006	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
Method Blank			R108137-10	7066-010	PU		11/02/01	11/06/01	MCM	Plutonium, Isotopic in Solids
		SOLID								
	B01-058									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1476

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R108137-05	7066-005	AM		10/18/01	11/06/01	MCM	Americium 241 in Soil
		SOLID		7066-005	C		10/15/01	11/06/01	MCM	Carbon 14 in Soil
	B01-058			7066-005	GAM		10/30/01	11/10/01	MCM	Gamma Scan
				7066-005	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-005	NI_L		10/07/01	11/06/01	MCM	Nickel 63 in Soil
				7066-005	NP		10/23/01	11/06/01	MCM	Neptunium in Soil
				7066-005	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-005	TC		10/16/01	11/06/01	MCM	Technetium 99 in Soil
				7066-005	TH		10/16/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-005	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-005	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
Lab Control Sample			R108137-09	7066-009	PU		11/02/01	11/06/01	MCM	Plutonium, Isotopic in Solids
		SOLID								
	B01-058									
Duplicate (R108137-01)			R108137-07	7066-007	AM		10/18/01	11/06/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	08/22/01	7066-007	C		10/14/01	11/06/01	MCM	Carbon 14 in Soil
	B01-058		08/27/01	7066-007	GAM		11/05/01	11/10/01	MCM	Gamma Scan
				7066-007	H		10/27/01	11/06/01	MCM	Tritium in Soil
				7066-007	NI_L		10/07/01	11/06/01	MCM	Nickel 63 in Soil
				7066-007	NP		10/18/01	11/06/01	MCM	Neptunium in Soil
				7066-007	SR		10/04/01	11/06/01	MCM	Total Strontium in Soil
				7066-007	TC		10/09/01	11/06/01	MCM	Technetium 99 in Soil
				7066-007	TH		10/18/01	11/06/01	MCM	Thorium, Isotopic in Soil
				7066-007	U		10/04/01	11/06/01	MCM	Uranium, Isotopic in Soil
				7066-007	U_T		10/09/01	11/06/01	MCM	Uranium, Total in Soil
Duplicate (R108137-01)			R108137-11	7066-011	PU		11/07/01	11/10/01	MCM	Plutonium, Isotopic in Solids
B-7A/200 E		SOLID	08/22/01							
	B01-058		08/27/01							
Spike (R108137-01)			R108137-08	7066-008	H		10/27/01	11/06/01	MCM	Tritium in Soil
B-7A/200 E		SOLID	08/22/01							
	B01-058		08/27/01							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

SDG 7066
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1476

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-058	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	4			1	1	1		7
C	B01-058	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1		7
GAM	B01-058	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	B01-058	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
NI_L	B01-058	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
NP	B01-058	Neptunium in Soil	NP237_LLE_PLATE_AEA	4			1	1	1		7
PU	B01-058	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1		7
SR	B01-058	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	B01-058	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
TH	B01-058	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1		7
U	B01-058	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
U_T	B01-058	Uranium, Total in Soil	UTOT_KPA	4			1	1	1		7
TOTALS				48			12	12	12	1	85

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-06 **Method Blank**

METHOD BLANK

SDG	7066	Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108137-06	Client sample id	Method Blank
Dept sample id	7066-006	Material/Matrix	SOLID
		SAF No	B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.107	0.17	0.29	400	U	H
Carbon 14	14762-75-5	2.54	2.4	3.9	50	U	C
Nickel 63	13981-37-8	-0.755	1.1	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.008	0.094	0.19	1.0	U	SR
Americium 241	14596-10-2	0.079	0.11	0.20	1.0	U	AM
Technetium 99	14133-76-7	-0.055	0.14	0.41	15	U	TC
Thorium 228	14274-82-9	0.186	0.30	0.57		U	TH
Thorium 230	14269-63-7	0.073	0.29	0.49	1.0	U	TH
Thorium 232	TH-232	0	0.073	0.28	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.002	0.002	0.003	0.10	U	U_T
Uranium 233	U-233/234	-0.019	0.009	0.016	1.0	U	U
Uranium 235	15117-96-1	-0.009	0.007	0.013	1.0	U	U
Uranium 238	U-238	-0.001	0.005	0.009	1.0	U	U
Neptunium 237	13994-20-2	-0.028	0.055	0.21	1.0	U	NP
Potassium 40	13966-00-2	U		0.50		U	GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Radium 226	13982-63-3	U		0.058	0.10	U	GAM
Radium 228	15262-20-1	U		0.13	0.20	U	GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		0.086	0.10	U	GAM
Europium 155	14391-16-3	U		0.072	0.10	U	GAM
Thorium 228	14274-82-9	U		0.043		U	GAM
Thorium 232	TH-232	U		0.13		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Americium 241	14596-10-2	U		0.095		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

B L A N K , c o n t .

SDG	7066	Client/Case no	Hanford	SDG	H1476
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-06	Client sample id	Method Blank		
Dept sample id	7066-006	Material/Matrix		SOLID	
		SAF No	B01-058		

QC-BLANK 39819

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

METHOD BLANK

SDG	7066	Client/Case no	Hanford	SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R108137-10	Client sample id	Method Blank	
Dept sample id	7066-010	Material/Matrix		SOLID
		SAF No	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Plutonium 238	13981-16-3	0.028	0.11	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.056	0.22	1.0	U	PU

200-TW-1 & 2 - Soil Sampling

QC-BLANK #40118

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7066
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1476
Case no No. 630

Lab sample id R108137-05
Dept sample id 7066-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-058

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
Tritium	23.2	0.61	0.28	400	J	H	23.6	0.94	98	84-116	80-120
Carbon 14	8460	85	11	50		C	11300	450	75	87-113	80-120
Nickel 63	225	4.3	2.0	30		NI_L	232	9.3	97	84-116	80-120
Total Strontium	22.4	0.79	0.22	1.0		SR	21.9	0.88	102	83-117	80-120
Americium 241	17.8	1.7	0.18	1.0		AM	19.1	0.76	93	84-116	80-120
Technetium 99	118	2.3	0.52	15		TC	118	4.7	100	84-116	80-120
Thorium 230	40.8	1.6	0.31	1.0		TH	40.8	1.6	100	89-111	80-120
Total Uranium (ug/g)	14.6	1.6	0.030	0.10		U_T	14.4	0.58	101	78-122	80-120
Uranium 233	17.9	0.25	0.11	1.0		U	18.6	0.74	96	90-110	80-120
Uranium 235	14.7	0.22	0.009	1.0		U	15.1	0.60	97	90-110	80-120
Uranium 238	20.0	0.27	0.11	1.0		U	20.2	0.81	99	90-110	80-120
Neptunium 237	19.8	1.2	0.046	1.0		NP	21.2	0.85	93	87-113	80-120
Cobalt 60	1.16	0.049	0.026	0.050		GAM	1.12	0.045	104	75-125	80-120
Cesium 137	1.35	0.045	0.034	0.10		GAM	1.30	0.052	104	75-125	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS 39818

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-09

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7066
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1476
Case no No. 630

Lab sample id R108137-09
Dept sample id 7066-009

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-058

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
Plutonium 238	28.2	2.8	0.27	1.0		PU	27.2	1.1	104	82-118	80-120
Plutonium 239/240	31.5	3.0	0.22	1.0		PU	29.0	1.2	109	81-119	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS #40117

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-07 B12MH5

DUPLICATE

SDG	7066			Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108137-07	Lab sample id	R108137-01	Client sample id	B12MH5
Dept sample id	7066-007	Dept sample id	7066-001	Location/Matrix	B-7A/200 E SOLID
		Received	08/27/01	Collected/Weight	08/22/01 04:25 1218 g
% solids	94.2	% solids	94.2	Custody/SAF No	B01-058-225 B01-058

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
Tritium	0.051	0.056	0.091	400	U	H	0.058	0.058	0.095	U	-	
Carbon 14	3.28	2.3	3.7	50	U	C	2.85	2.3	3.8	U	-	
Nickel 63	-1.23	1.3	2.2	30	U	NI_L	-1.25	1.2	2.1	U	-	
Total Strontium	0.761	0.16	0.18	1.0	J	SR	0.689	0.16	0.19	J	10	51
Americium 241	-0.039	0.039	0.15	1.0	U	AM	0	0.043	0.16	U	-	
Technetium 99	-0.035	0.15	0.46	15	U	TC	0.071	0.17	0.54	U	-	
Thorium 228	0.077	0.31	0.62		U	TH	0.676	0.52	0.70	U	-	
Thorium 230	-0.076	0.23	0.42	1.0	U	TH	0.352	0.40	0.38	U	-	
Thorium 232	0.419	0.31	0.29	1.0	J	TH	0.302	0.20	0.38	U	32	154
Total Uranium (ug/g)	0.903	0.11	0.003	0.10		U_T	0.930	0.10	0.003		3	31
Uranium 233	0.467	0.033	0.016	1.0	J	U	0.474	0.031	0.013	J	1	18
Uranium 235	0.029	0.011	0.008	1.0	J	U	0.016	0.008	0.007	J	58	91
Uranium 238	0.472	0.032	0.010	1.0	J	U	0.464	0.030	0.009	J	2	18
Neptunium 237	0	0.079	0.12	1.0	U	NP	0	0.036	0.053	U	-	
Potassium 40	9.99	0.71	0.41			GAM	10.8	0.78	0.33		8	35
Cobalt 60	U		0.041	0.050	U	GAM	U		0.042	U	-	
Cesium 137	5.97	0.11	0.068	0.10		GAM	6.67	0.14	0.063		11	32
Radium 226	0.412	0.086	0.093	0.10		GAM	0.396	0.082	0.092		4	54
Radium 228	0.575	0.16	0.15	0.20		GAM	0.654	0.16	0.16		13	64
Europium 152	U		0.13	0.10	U	GAM	U		0.15	U	-	
Europium 154	U		0.12	0.10	U	GAM	U		0.14	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.13	U	-	
Thorium 228	0.553	0.050	0.057			GAM	0.768	0.094	0.10		33	40
Thorium 232	0.575	0.16	0.15			GAM	0.654	0.16	0.16		13	64
Uranium 235	U		0.19		U	GAM	U		0.19	U	-	
Uranium 238	U		4.4		U	GAM	U		4.6	U	-	
Americium 241	U		0.10		U	GAM	U		0.21	U	-	

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/10/01

DUPLICATE, cont.

SDG	7066			Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108137-07	Lab sample id	R108137-01	Client sample id	B12MH5
Dept sample id	7066-007	Dept sample id	7066-001	Location/Matrix	B-7A/200 E SOLID
		Received	08/27/01	Collected/Weight	08/22/01 04:25 1218 g
% solids	94.2	% solids	94.2	Custody/SAF No	B01-058-225 B01-058

QC-DUP#1 39820

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-11 B12MH5

DUPLICATE

SDG	7066			Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108137-11	Lab sample id	R108137-01	Client sample id	B12MH5
Dept sample id	7066-011	Dept sample id	7066-001	Location/Matrix	B-7A/200 E SOLID
		Received	08/27/01	Collected/Weight	08/22/01 04:25 1218 g
% solids	94.2	% solids	94.2	Custody/SAF No	B01-058-225 B01-058

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
Plutonium 238	0	0.045	0.17	1.0	U	PU	0	0.050	0.19	U	-	
Plutonium 239/240	0	0.045	0.17	1.0	U	PU	0	0.050	0.19	U	-	

200-TW-1 & 2 - Soil Sampling

QC-DUP#1A1 40119

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-08 B12MH5

MATRIX SPIKE

SDG	7066			Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R108137-08	Lab sample id	R108137-01	Client sample id	B12MH5
Dept sample id	7066-008	Dept sample id	7066-001	Location/Matrix	B-7A/200 E SOLID
		Received	08/27/01	Collected/Weight	08/22/01 04:25 1218 g
% solids	94.2	% solids	94.2	Custody/SAF No	B01-058-225 B01-058

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	36.1	0.41	0.090	400	JX	H	47.1	1.9	0.058	0.058	77	87-113	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#1 39821

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-03 B12MH4

DATA SHEET

SDG	7066	Client/Case no	Hanford	SDG H1476	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-03	Client sample id	B12MH4		
Dept sample id	7066-003	Location/Matrix	B-7A/200 E	SOLID	
Received	08/28/01	Collected/Weight	08/23/01 00:45	1168 g	
% solids	94.5	Custody/SAF No	B01-058-224	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.051	0.056	0.092	400	U	H
Carbon 14	14762-75-5	3.72	2.4	3.9	50	U	C
Nickel 63	13981-37-8	-1.16	1.2	2.2	30	U	NI_L
Total Strontium	SR-RAD	13.5	0.56	0.18	1.0		SR
Americium 241	14596-10-2	0.034	0.067	0.13	1.0	U	AM
Technetium 99	14133-76-7	-0.150	0.16	0.59	15	U	TC
Thorium 228	14274-82-9	0.540	0.26	0.20			TH
Thorium 230	14269-63-7	0.685	0.36	0.31	1.0	J	TH
Thorium 232	TH-232	0.381	0.20	0.19	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.964	0.11	0.003	0.10		U_T
Uranium 233	U-233/234	0.463	0.031	0.015	1.0	J	U
Uranium 235	15117-96-1	0.023	0.009	0.008	1.0	J	U
Uranium 238	U-238	0.463	0.030	0.009	1.0	J	U
Neptunium 237	13994-20-2	0.037	0.075	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0.126	0.19	0.30	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.063	0.24	1.0	U	PU
Potassium 40	13966-00-2	12.2	0.73	0.30			GAM
Cobalt 60	10198-40-0	U		0.045	0.050	U	GAM
Cesium 137	10045-97-3	4.54	0.10	0.047	0.10		GAM
Radium 226	13982-63-3	0.544	0.073	0.071	0.10		GAM
Radium 228	15262-20-1	0.646	0.15	0.15	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.090	0.10	U	GAM
Thorium 228	14274-82-9	0.742	0.050	0.057			GAM
Thorium 232	TH-232	0.646	0.15	0.15			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		4.5		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-03 B12MH4

DATA SHEET, cont

SDG	7066	Client/Case no	Hanford	SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R108137-03	Client sample id	B12MH4	
Dept sample id	7066-003	Location/Matrix	B-7A/200 E	SOLID
Received	08/28/01	Collected/Weight	08/23/01 00:45	1168 g
% solids	94.5	Custody/SAF No	B01-058-224	B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.056		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-01 **B12MH5**

DATA SHEET

SDG	7066	Client/Case no	Hanford	SDG H1476	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-01	Client sample id	B12MH5		
Dept sample id	7066-001	Location/Matrix	B-7A/200 E	SOLID	
Received	08/27/01	Collected/Weight	08/22/01 04:25	1218 g	
% solids	94.2	Custody/SAF No	B01-058-225	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.058	0.058	0.095	400	U	H
Carbon 14	14762-75-5	2.85	2.3	3.8	50	U	C
Nickel 63	13981-37-8	-1.25	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.689	0.16	0.19	1.0	J	SR
Americium 241	14596-10-2	0	0.043	0.16	1.0	U	AM
Technetium 99	14133-76-7	0.071	0.17	0.54	15	U	TC
Thorium 228	14274-82-9	0.676	0.52	0.70		U	TH
Thorium 230	14269-63-7	0.352	0.40	0.38	1.0	U	TH
Thorium 232	TH-232	0.302	0.20	0.38	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.930	0.10	0.003	0.10		U_T
Uranium 233	U-233/234	0.474	0.031	0.013	1.0	J	U
Uranium 235	15117-96-1	0.016	0.008	0.007	1.0	J	U
Uranium 238	U-238	0.464	0.030	0.009	1.0	J	U
Neptunium 237	13994-20-2	0	0.036	0.053	1.0	U	NP
Plutonium 238	13981-16-3	0	0.050	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.050	0.19	1.0	U	PU
Potassium 40	13966-00-2	10.8	0.78	0.33			GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	6.67	0.14	0.063	0.10		GAM
Radium 226	13982-63-3	0.396	0.082	0.092	0.10		GAM
Radium 228	15262-20-1	0.654	0.16	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.768	0.094	0.10			GAM
Thorium 232	TH-232	0.654	0.16	0.16			GAM
Uranium 235	15117-96-1	U		0.19		U	GAM
Uranium 238	U-238	U		4.6		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

DATA SHEET, cont

SDG	7066	Client/Case no	Hanford	SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R108137-01	Client sample id	B12MH5	
Dept sample id	7066-001	Location/Matrix	B-7A/200 E	SOLID
Received	08/27/01	Collected/Weight	08/22/01 04:25	1218 g
% solids	94.2	Custody/SAF No	B01-058-225	B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.21		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-02 B12MH6

DATA SHEET

SDG	7066	Client/Case no	Hanford	SDG H1476	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-02	Client sample id	B12MH6		
Dept sample id	7066-002	Location/Matrix	B-7A/200 E	SOLID	
Received	08/27/01	Collected/Weight	08/22/01 05:30	1097 g	
% solids	91.2	Custody/SAF No	B01-058-225	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.027	0.056	0.093	400	U	H
Carbon 14	14762-75-5	6.30	2.6	4.1	50	J	C
Nickel 63	13981-37-8	-0.101	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	2.66	0.26	0.18	1.0		SR
Americium 241	14596-10-2	0.018	0.072	0.14	1.0	U	AM
Technetium 99	14133-76-7	-0.048	0.17	0.59	15	U	TC
Thorium 228	14274-82-9	0.687	0.11	0.11			TH
Thorium 230	14269-63-7	0.414	0.15	0.28	1.0	J	TH
Thorium 232	TH-232	0.644	0.085	0.035	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.995	0.11	0.003	0.10		U_T
Uranium 233	U-233/234	0.467	0.032	0.016	1.0	J	U
Uranium 235	15117-96-1	0.029	0.010	0.010	1.0	J	U
Uranium 238	U-238	0.458	0.030	0.010	1.0	J	U
Neptunium 237	13994-20-2	0	17	0.41	1.0	U	NP
Plutonium 238	13981-16-3	0	0.057	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.172	0.12	0.22	1.0	U	PU
Potassium 40	13966-00-2	14.5	0.42	0.18			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	42.5	0.17	0.048	0.10		GAM
Radium 226	13982-63-3	0.584	0.063	0.079	0.10		GAM
Radium 228	15262-20-1	0.763	0.083	0.083	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.701	0.073	0.097			GAM
Thorium 232	TH-232	0.763	0.083	0.083			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		2.4		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

DATA SHEET, cont

SDG	7066	Client/Case no	Hanford		SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-02	Client sample id	B12MH6		
Dept sample id	7066-002	Location/Matrix	B-7A/200 E		SOLID
Received	08/27/01	Collected/Weight	08/22/01 05:30	1097 g	
% solids	91.2	Custody/SAF No	B01-058-225	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.32		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-04 **B12MH7**

DATA SHEET

SDG	7066	Client/Case no	Hanford SDG H1476
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108137-04	Client sample id	B12MH7
Dept sample id	7066-004	Location/Matrix	B-7A/200 E SOLID
Received	08/28/01	Collected/Weight	08/22/01 23:40 1171 g
% solids	95.2	Custody/SAF No	B01-058-224 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.011	0.055	0.095	400	U	H
Carbon 14	14762-75-5	2.22	2.3	3.8	50	U	C
Nickel 63	13981-37-8	0	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	9.44	0.48	0.19	1.0		SR
Americium 241	14596-10-2	-0.017	0.035	0.13	1.0	U	AM
Technetium 99	14133-76-7	-0.076	0.16	0.57	15	U	TC
Thorium 228	14274-82-9	0.884	0.34	0.26			TH
Thorium 230	14269-63-7	0.729	0.40	0.41	1.0	J	TH
Thorium 232	TH-232	0.265	0.20	0.25	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.939	0.11	0.003	0.10		U_T
Uranium 233	U-233/234	0.470	0.030	0.012	1.0	J	U
Uranium 235	15117-96-1	0.023	0.010	0.009	1.0	J	U
Uranium 238	U-238	0.465	0.029	0.007	1.0	J	U
Neptunium 237	13994-20-2	0	0.035	0.14	1.0	U	NP
Plutonium 238	13981-16-3	-0.025	0.051	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.025	0.051	0.19	1.0	U	PU
Potassium 40	13966-00-2	2.27	0.093	0.052			GAM
Cobalt 60	10198-40-0	U		0.005	0.050	U	GAM
Cesium 137	10045-97-3	1.52	0.017	0.007	0.10		GAM
Radium 226	13982-63-3	0.094	0.011	0.011	0.10	J	GAM
Radium 228	15262-20-1	0.132	0.020	0.018	0.20	J	GAM
Europium 152	14683-23-9	U		0.017	0.10	U	GAM
Europium 154	15585-10-1	U		0.015	0.10	U	GAM
Europium 155	14391-16-3	U		0.018	0.10	U	GAM
Thorium 228	14274-82-9	0.113	0.008	0.009			GAM
Thorium 232	TH-232	0.132	0.020	0.018			GAM
Uranium 235	15117-96-1	U		0.024		U	GAM
Uranium 238	U-238	U		0.58		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

R108137-04 **B12MH7**

DATA SHEET, cont

SDG	7066	Client/Case no	Hanford	SDG H1476	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108137-04	Client sample id	B12MH7		
Dept sample id	7066-004	Location/Matrix	B-7A/200 E	SOLID	
Received	08/28/01	Collected/Weight	08/22/01 23:40	1171 g	
% solids	95.2	Custody/SAF No	B01-058-224	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.020		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test AM Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7008-047						
B12MH4	R108137-03			7066-003	U	
B12MH5	R108137-01			7066-001	U	
B12MH6	R108137-02			7066-002	U	
B12MH7	R108137-04			7066-004	U	
BLK (QC ID=39819)	R108137-06			7066-006	U	
LCS (QC ID=39818)	R108137-05			7066-005	ok	
Duplicate (R108137-01)	R108137-07			7066-007	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	1.0	

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 7008-047	2σ prep error 5.0 %			Reference Lab Notebook 7008 pg. 047												
B12MH4	R108137-03			0.13	0.500			95		147			65	10/09/01	10/27	SS-042
B12MH5	R108137-01			0.16	0.500			81		133			57	10/09/01	10/18	SS-043
B12MH6	R108137-02			0.14	0.500			93		133			57	10/09/01	10/18	SS-044
B12MH7	R108137-04			0.13	0.500			92		146			66	10/09/01	10/27	SS-043
BLK (QC ID=39819)	R108137-06			0.20	0.500			64		133				10/09/01	10/18	SS-048
LCS (QC ID=39818)	R108137-05			0.18	0.500			76		133				10/09/01	10/18	SS-047
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.15	0.500			89		133			57	10/09/01	10/18	SS-049
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test AM Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA	0.16	±	0.053
FOR 7 SAMPLES	YIELD	84	±	23

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test NP Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7008-047						
B12MH4	R108137-03			7066-003	U	
B12MH5	R108137-01			7066-001	U	
B12MH6	R108137-02			7066-002	U	
B12MH7	R108137-04			7066-004	U	
BLK (QC ID=39819)	R108137-06			7066-006	U	
LCS (QC ID=39818)	R108137-05			7066-005	ok	
Duplicate (R108137-01)	R108137-07			7066-007	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	1.0	

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 7008-047	2σ prep error 5.0 %			Reference Lab Notebook 7008 pg. 047												
B12MH4	R108137-03			0.11	0.500			61		107			58	10/07/01	10/20	SS-027
B12MH5	R108137-01			0.053	0.500			58		221			62	10/07/01	10/23	SS-044
B12MH6	R108137-02			0.41	0.500			52		135			57	10/07/01	10/18	SS-024
B12MH7	R108137-04			0.14	0.500			59		222			62	10/07/01	10/23	SS-047
BLK (QC ID=39819)	R108137-06			0.21	0.500			39		222				10/07/01	10/23	SS-049
LCS (QC ID=39818)	R108137-05			0.046	0.500			66		222				10/07/01	10/23	SS-048
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.12	0.500			57		107			57	10/07/01	10/18	SS-032
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES				
MDA	0.16	±	0.25
YIELD	56	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test PU Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7008-047								
B12MH4	R108137-03		A1	7066-003	U		U	
B12MH5	R108137-01		A1	7066-001	U		U	
B12MH6	R108137-02		A1	7066-002	U		U	
B12MH7	R108137-04		A1	7066-004	U		U	
BLK (QC ID=40118)	R108137-10			7066-010	U		U	
LCS (QC ID=40117)	R108137-09			7066-009	ok		ok	
Duplicate (R108137-01)	R108137-11			7066-011	-	U	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 7008-047 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 047																
B12MH4	R108137-03		A1	0.30	0.500			69		106			69	10/31/01	10/31	SS-041
B12MH5	R108137-01		A1	0.19	0.500			94		106			70	10/31/01	10/31	SS-031
B12MH6	R108137-02		A1	0.22	0.500			81		106			70	10/31/01	10/31	SS-032
B12MH7	R108137-04		A1	0.19	0.500			85		106			70	10/31/01	10/31	SS-042
BLK (QC ID=40118)	R108137-10			0.22	0.500			78		104				10/31/01	11/02	SS-042
LCS (QC ID=40117)	R108137-09			0.27	0.500			79		104				10/31/01	11/02	SS-041
Duplicate (R108137-01) (QC ID=40119)	R108137-11			0.17	0.500			95		117			77	10/31/01	11/07	SS-031
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.22 ± 0.094
YIELD 83 ± 18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test TH Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7008-047							
B12MH4	R108137-03			7066-003	0.540	0.685 J	0.381 J
B12MH5	R108137-01			7066-001	U	U	U
B12MH6	R108137-02			7066-002	0.687	0.414 J	0.644 J
B12MH7	R108137-04			7066-004	0.884	0.729 J	0.265 J
BLK (QC ID=39819)	R108137-06			7066-006	U	U	U
LCS (QC ID=39818)	R108137-05			7066-005		ok	
Duplicate (R108137-01)	R108137-07			7066-007	- U	- U	ok J
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)		1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 7008-047 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 047																
B12MH4	R108137-03			0.31	0.250			91		204			56	10/08/01	10/18	SS-042
B12MH5	R108137-01			0.38	0.250			76		153			77	10/08/01	11/07	SS-024
B12MH6	R108137-02			0.28	0.250			89		2607			49	10/08/01	10/10	SS-024
B12MH7	R108137-04			0.41	0.250			95		156			69	10/08/01	10/30	SS-032
BLK (QC ID=39819)	R108137-06			0.49	0.250			94		181				10/08/01	10/18	SS-019
LCS (QC ID=39818)	R108137-05			0.31	0.250			82		895				10/08/01	10/16	SS-024
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.42	0.250			92		181			57	10/08/01	10/18	SS-021
Nominal values and limits from method				1.0	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-905	Thorium in Water and Dissolved Solid Sample Using TRU and AG 1x8 Resin, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.37 ± 0.15
YIELD 88 ± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test U Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7008-047											
B12MH4	R108137-03			7066-003	0.463 J	0.023 J	0.463 J	100	9	5	2
B12MH5	R108137-01			7066-001	0.474 J	0.016 J	0.464 J	102	9	3	2
B12MH6	R108137-02			7066-002	0.467 J	0.029 J	0.458 J	102	10	6	2
B12MH7	R108137-04			7066-004	0.470 J	0.023 J	0.465 J	101	9	5	2
BLK (QC ID=39819)	R108137-06			7066-006	U	U	U				
LCS (QC ID=39818)	R108137-05			7066-005	ok	ok	ok				
Duplicate (R108137-01)	R108137-07			7066-007	ok J	ok J	ok J	99	10	6	2
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-TW-1 & 2 - Soil Sampling							Averages	101		5	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 7008-047	2σ prep error 5.0 %				Reference Lab Notebook 7008 pg. 047											
B12MH4	R108137-03			0.015	0.500			92		5464			42	10/04/01	10/04	SS-046
B12MH5	R108137-01			0.013	0.500			92		5465			43	10/04/01	10/04	SS-043
B12MH6	R108137-02			0.016	0.500			88		5465			43	10/04/01	10/04	SS-044
B12MH7	R108137-04			0.012	0.500			98		5463			43	10/04/01	10/04	SS-047
BLK (QC ID=39819)	R108137-06			0.016	0.500			89		5464				10/04/01	10/04	SS-049
LCS (QC ID=39818)	R108137-05			0.11	0.500			95		5464				10/04/01	10/04	SS-048
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.016	0.500			85		5464			43	10/04/01	10/04	SS-050
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.028 ± 0.072
YIELD 91 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test SR Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7008-047					
B12MH4	R108137-03			7066-003	13.5
B12MH5	R108137-01			7066-001	0.689 J
B12MH6	R108137-02			7066-002	2.66
B12MH7	R108137-04			7066-004	9.44
BLK (QC ID=39819)	R108137-06			7066-006	U
LCS (QC ID=39818)	R108137-05			7066-005	ok
Duplicate (R108137-01)	R108137-07			7066-007	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
200-TW-1 & 2 - Soil Sampling					

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 7008-047	*2σ prep error 10.0 %*			*Reference Lab Notebook 7008 pg. 047*												
B12MH4	R108137-03			0.18	1.00			99		100			42	10/04/01	10/04	GRB-203
B12MH5	R108137-01			0.19	1.00			100		100			43	10/04/01	10/04	GRB-222
B12MH6	R108137-02			0.18	1.00			98		100			43	10/04/01	10/04	GRB-202
B12MH7	R108137-04			0.19	1.00			98		100			43	10/04/01	10/04	GRB-217
BLK (QC ID=39819)	R108137-06			0.19	1.00			92		100				10/04/01	10/04	GRB-218
LCS (QC ID=39818)	R108137-05			0.22	1.00			91		100				10/04/01	10/04	GRB-217
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.18	1.00			97		100			43	10/04/01	10/04	GRB-231
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 4
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.19 ± 0.028
YIELD 96 ± 7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test IC Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7008-047						
B12MH4	R108137-03			7066-003	U	
B12MH5	R108137-01			7066-001	U	
B12MH6	R108137-02			7066-002	U	
B12MH7	R108137-04			7066-004	U	
BLK (QC ID=39819)	R108137-06			7066-006	U	
LCS (QC ID=39818)	R108137-05			7066-005	ok	
Duplicate (R108137-01)	R108137-07			7066-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
200-TW-1 & 2 - Soil Sampling						

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 7008-047	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 047															
B12MH4	R108137-03			0.59	1.01			89		50			47	10/06/01	10/09	GRB-202
B12MH5	R108137-01			0.54	1.08			92		50			48	10/06/01	10/09	GRB-232
B12MH6	R108137-02			0.59	1.00			89		50			55	10/06/01	10/16	GRB-230
B12MH7	R108137-04			0.57	1.00			93		50			48	10/06/01	10/09	GRB-203
BLK (QC ID=39819)	R108137-06			0.41	1.00			100		78				10/06/01	10/09	GRB-205
LCS (QC ID=39818)	R108137-05			0.52	1.00			96		50				10/06/01	10/16	GRB-224
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.46	1.08			88		78			48	10/06/01	10/09	GRB-206
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id IMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test	TC
Matrix	SOLID
SDG	7066
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1476

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 3
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 7 SAMPLES				
MDA	0.53	±	0.14
YIELD	92	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test GAM Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 7008-047							
B12MH4	R108137-03			7066-003	U		4.54
B12MH5	R108137-01			7066-001	U		6.67
B12MH6	R108137-02			7066-002	U		42.5
B12MH7	R108137-04			7066-004	U		1.52
BLK (QC ID=39819)	R108137-06			7066-006	U		U
LCS (QC ID=39818)	R108137-05			7066-005	ok		ok
Duplicate (R108137-01)	R108137-07			7066-007	-	U	ok
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	0.050		0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX 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 7008-047 2σ prep error 15.0 % Reference Lab Notebook 7008 pg. 047																
B12MH4	R108137-03			0.12	720					203			76	09/26/01	11/07	02,01,00
B12MH5	R108137-01			0.11	186					431			75	09/26/01	11/05	JR,05,00
B12MH6	R108137-02			0.057	771					424			68	09/26/01	10/29	MB,05,00
B12MH7	R108137-04			0.014	703					1117			69	09/26/01	10/30	02,04,00
BLK (QC ID=39819)	R108137-06			0.056	186					696				09/26/01	10/31	01,03,00
LCS (QC ID=39818)	R108137-05			0.026	186					1117				09/26/01	10/30	MB,05,00
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.10	186					929			75	09/26/01	11/05	JR,03,00
Nominal values and limits from method				0.050	186					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.069 ± 0.083
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test U T Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/g)
Preparation batch 7008-047					
B12MH4	R108137-03			7066-003	0.964
B12MH5	R108137-01			7066-001	0.930
B12MH6	R108137-02			7066-002	0.995
B12MH7	R108137-04			7066-004	0.939
BLK (QC ID=39819)	R108137-06			7066-006	U
LCS (QC ID=39818)	R108137-05			7066-005	ok
Duplicate (R108137-01)	R108137-07			7066-007	ok
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-047	2σ prep error 9.0 % Reference Lab Notebook 7008 pg. 047															
B12MH4	R108137-03			0.003	0.100								47	10/09/01	10/09	KPA-001
B12MH5	R108137-01			0.003	0.100								48	10/09/01	10/09	KPA-001
B12MH6	R108137-02			0.003	0.100								48	10/09/01	10/09	KPA-001
B12MH7	R108137-04			0.003	0.100								48	10/09/01	10/09	KPA-001
BLK (QC ID=39819)	R108137-06			0.003	0.100									10/09/01	10/09	KPA-001
LCS (QC ID=39818)	R108137-05			0.030	0.100									10/09/01	10/09	KPA-001
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.003	0.100								48	10/09/01	10/09	KPA-001
Nominal values and limits from method				0.10	0.100								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test U T	Matrix SOLID
SDG 7066	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract No. 630	
Contract SDG H1476	

PROCEDURES	REFERENCE	UTOT_KPA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 3
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 3

AVERAGES ± 2 SD	MDA	0.007 ± 0.020
FOR 7 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test C Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14
Preparation batch 7008-047					
B12MH4	R108137-03			7066-003	U
B12MH5	R108137-01			7066-001	U
B12MH6	R108137-02			7066-002	6.30 J
B12MH7	R108137-04			7066-004	U
BLK (QC ID=39819)	R108137-06			7066-006	U
LCS (QC ID=39818)	R108137-05			7066-005	LOW
Duplicate (R108137-01)	R108137-07			7066-007	- U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	50

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 7008-047 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 047																
B12MH4	R108137-03			3.9	0.203			100		100			53	10/11/01	10/15	LSC-007
B12MH5	R108137-01			3.8	0.207			100		100			53	10/11/01	10/14	LSC-007
B12MH6	R108137-02			4.1	0.236			100		100			53	10/11/01	10/14	LSC-007
B12MH7	R108137-04			3.8	0.207			100		100			54	10/11/01	10/15	LSC-007
BLK (QC ID=39819)	R108137-06			3.9	0.200			100		100				10/11/01	10/14	LSC-007
LCS (QC ID=39818)	R108137-05			11	0.200			100		15				10/11/01	10/15	LSC-007
Duplicate (R108137-01) (QC ID=39820)	R108137-07			3.7	0.214			100		100			53	10/11/01	10/14	LSC-007
Nominal values and limits from method				50	0.200					50			180			

PROCEDURES	REFERENCE	C14_COX_LSC
	CP-060	Soil Preparation, rev 3
	CP-251	Tritium/Carbon-14 Oxidation, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 4.9 ± 5.4
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test H Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7008-047						
B12MH4	R108137-03			7066-003	U	
B12MH5	R108137-01			7066-001	U	
B12MH6	R108137-02			7066-002	U	
B12MH7	R108137-04			7066-004	U	
BLK (QC ID=39819)	R108137-06			7066-006	U	
LCS (QC ID=39818)	R108137-05			7066-005	ok	J
Duplicate (R108137-01)	R108137-07			7066-007	-	U
Spike (R108137-01)	R108137-08			7066-008	LOW	JX

Nominal values and limits from method RDLs (pCi/g) 400
200-TW-1 & 2 - Soil Sampling

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 7008-047	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 047															
B12MH4	R108137-03			0.092	21.1			100		100			65	10/10/01	10/27	LSC-005
B12MH5	R108137-01			0.095	20.4			100		100			66	10/10/01	10/27	LSC-005
B12MH6	R108137-02			0.093	21.0			99		100			66	10/10/01	10/27	LSC-005
B12MH7	R108137-04			0.095	20.6			96		100			66	10/10/01	10/27	LSC-005
BLK (QC ID=39819)	R108137-06			0.29	20.0			33		100				10/10/01	10/27	LSC-005
LCS (QC ID=39818)	R108137-05			0.28	20.0			33		100				10/10/01	10/27	LSC-005
Duplicate (R108137-01) (QC ID=39820)	R108137-07			0.091	21.0			100		100			66	10/10/01	10/27	LSC-005
Spike (R108137-01) (QC ID=39821)	R108137-08			0.090	21.3			100		100			66	10/10/01	10/27	LSC-005
Nominal values and limits from method				400	20.0					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test H	Matrix SOLID
SDG 7066	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1476	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-060	Soil Preparation, rev 3
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 4

AVERAGES ± 2 SD	MDA	0.14	±	0.18
FOR 8 SAMPLES	YIELD	83	±	61

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1476

Test NI L Matrix SOLID
SDG 7066
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1476

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7008-047						
B12MH4	R108137-03			7066-003	U	
B12MH5	R108137-01			7066-001	U	
B12MH6	R108137-02			7066-002	U	
B12MH7	R108137-04			7066-004	U	
BLK (QC ID=39819)	R108137-06			7066-006	U	
LCS (QC ID=39818)	R108137-05			7066-005	ok	
Duplicate (R108137-01)	R108137-07			7066-007	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	30	

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 7008-047	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 047															
B12MH4	R108137-03			2.2	0.500			85		100			44	10/03/01	10/06	LSC-007
B12MH5	R108137-01			2.1	0.500			86		100			45	10/03/01	10/06	LSC-007
B12MH6	R108137-02			2.2	0.500			85		100			45	10/03/01	10/06	LSC-007
B12MH7	R108137-04			2.2	0.500			83		100			45	10/03/01	10/06	LSC-007
BLK (QC ID=39819)	R108137-06			2.0	0.500			94		100				10/03/01	10/07	LSC-007
LCS (QC ID=39818)	R108137-05			2.0	0.500			91		100				10/03/01	10/07	LSC-007
Duplicate (R108137-01) (QC ID=39820)	R108137-07			2.2	0.500			84		100			46	10/03/01	10/07	LSC-007
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 3
	CP-431	Nickel-63 Purification, rev 4

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 2.1 ± 0.19
YIELD 87 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/10/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-225	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E H1476 (7066)		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC 00.005	Field Logbook No.: EL-1518-1	COA: B20TW2A44C ~~B20TW2674C~~ DT 8/22/01	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: TMA/~~REGRA~~ DJW 08/15/01	Offsite Property No.: A010348		Bill of Lading/Air Bill No.: 4235 7954 - 6759	

POSSIBLE SAMPLE HAZARDS/REMARKS
500 COUNTS AFS ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# IB at the 3728 Shipping Facility on 8 22 01.
Collector not available to relinquish samples on 8 24 01 for shipment.. RT 8/24/01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
	Chromium Hex - 7196 DJW 08/15/01	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time							
✓ B12MH5	SOIL	08/22/01	0425				X		HETO	B12MJ4

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DJWATSON/TGW	08/22/01 0730	REF IB	08/22/01 0730
Relinquished By/Removed From: Ref IB 3728	8.24.01 0900	R Y Thorne	8.24.01 0900
Relinquished By/Removed From: R Y Thorne	8.24.01 0900	FED EX	
Relinquished By/Removed From: Fed Ex 8-25-01		D Lind J Lind	8-27-01 800
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) ~~ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}~~
~~(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH Diesel Range - WTPH-D~~
(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

DJW 08/15/01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-226	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E H1476 (7066)	SAF No.: B01-058	
Ice Chest No.: EPC 06.005	Field Logbook No.: EL-1518-1	COA B20TW2A4K ~~B20TW2674C~~ BT	Method of Shipment: Fed EX
Shipped To: TMA/~~RECRA~~ DSW 08/15/01	Offsite Property No.: A010348 8/22/01	Bill of Lading/Air Bill No.: 4235 7954 - 6729	

POSSIBLE SAMPLE HAZARDS/REMARKS
650 COUNTS B/G ON SOIL
NO DOSE MEASURED ON BOTTLES

Samples stored in Ref.# 1B at the 3728
Shipping Facility on 8 22/01.
Collector not available to relinquish samples on 8 22/01 for shipment..
ZT 8/24/01 24 8.24.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL ✓			
	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time							
B12MH6	SOIL	8-22-01	0530				X		TTETO	B12MJ5

DSW 08/15/01

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DG Watson / R Smith	8/22/01 0730	REF, CB	08/22/01 0730
Relinquished By/Removed From: R of 1B 3728	8.24.01 0900	R Thorne	8.24.01 0900
Relinquished By/Removed From: R R Thorne	8.24.01 0900	FEDEX	
Relinquished By/Removed From: Fed EX	8-25-01	J Lind JLind	8-27-01 800
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ~~ICP Metals - 6010A (FAL) {Cadmium, Chromium, Copper, Nickel, Silver}, ICP Metals - 6010A (Add-on) {Lead}~~
(2) ~~IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
(3) ~~Semi-VOA - 8270A (Add On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-224	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E H1476 (7066)		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: multiple SEE OSPC	Field Logbook No.: EL-1518-1	COA B20TW2 A44C ~~B20TW2674C~~ BT	Method of Shipment: Fed EX	
Shipped To: TMA/~~HBORA~~ DSW 08/15/01	Offsite Property No.: A010285 8/23/01		Bill of Lading/Air Bill No.: 42357454 - Multiple See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND.

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8 27 01. Collector not available to relenquish samples on 8 27 01 for shipment.

RT 8.27.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196 DSW 08/15/01	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B12MH4	SOIL	8-23-01	0045							X		B12MJ7

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DSWATSON/[illegible]	08/23/01 0915	Received By/Stored In: REF. 1B	08/23/01 0915
Relinquished By/Removed From: K.H. 1B 3728	8.27.01 0900	Received By/Stored In: K Thore	8.27.01 0900
Relinquished By/Removed From: K.H. Thore	8.27.01 0900	Received By/Stored In: FEDEX	8-27-01
Relinquished By/Removed From: Fed Ex	8-28-01 10:00	Received By/Stored In: JR Cook	8-28-01 10:00
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) ~~ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead)~~
(2) ~~IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
(3) ~~Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D~~
(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-227	Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** B-7A/200 E H1476 (7066)	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. Multiple SEE OSPC	**Field Logbook No.** EL-1518-1 **COA** B20TW2444C ~~B20TW2674C~~ BT	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA DSW 08/15/01	**Offsite Property No.** A010285 8/23/01	**Bill of Lading/Air Bill No.** 42357454 — Multiple See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

FIELD RADIOLOGICAL INSTRUMENTS READ BACKGROUND

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8 23 01. Collector not available to relenquish samples on 8/27/01 for shipment. RT 8.27.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
	Chromium Hex - 7196 DSW 08/15/01	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time								Tie to
✓ B12MH7	SOIL	08/22/01	2350						X		B12M16

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D Watson/Recra	8/23/01 0915	REF. 1B	08/23/01 0915
Ref 1B 3728	8.27.01 0900	R.T. Thore	0900 8.27.01
R.T. Thore	8.27.01 0900	FEDEX	8-27-01
Fed Ex	8-28-01 10:22	J R Cowan	8-28-01 10:22

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver), ICP Metals - 6010A (Add-on) (Lead)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

DSW 08/15/01

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

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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 8-28-01 10:00

CoC No. B01-058-224, B01-058-227

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

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 1 (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 8-28-01
14. Received by [signature] Date: 8-28-01 Time: 10:00

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____