0056243 H1449

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12C70						
% SOLIDS	001	S	01L%S103	08/06/01	08/09/01	08/10/01
% SOLIDS	001 REP	S	01L%S103	08/06/01	08/09/01	08/10/01
CHLORIDE BY IC	001	S	01LICA54	08/06/01	08/16/01	08/16/01
CHLORIDE BY IC	001 REP	S	01LICA54	08/06/01	08/16/01	08/16/01
CHLORIDE BY IC	001 MS	S	01LICA54	08/06/01	08/16/01	08/16/01
FLUORIDE BY IC	001	S	01LICA54	08/06/01	08/16/01	08/16/01
FLUORIDE BY IC	001 REP	S	01LICA54	08/06/01	08/16/01	08/16/01
FLUORIDE BY IC	001 MS	S	01LICA54	08/06/01	08/16/01	08/16/01
NITRITE BY IC	001	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRITE BY IC	001 REP	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRITE BY IC	001 MS	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRATE BY IC	001	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRATE BY IC	001 REP	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRATE BY IC	001 MS	S	01LIC054	08/06/01	08/16/01	08/16/01
TOTAL CYANIDE	001	S	01LC075	08/06/01	08/09/01	08/09/01
PHOSPHATE BY IC	001	S	01LICA54	08/06/01	08/16/01	08/16/01
PHOSPHATE BY IC	001 REP	S	01LICA54	08/06/01	08/16/01	08/16/01
PHOSPHATE BY IC	001 MS	S	01LICA54	08/06/01	08/16/01	08/16/01
CHROMIUM VI	001	S	01LVI066	08/06/01	08/14/01	08/14/01
SULFATE BY IC	001	S	01LICA54	08/06/01	08/16/01	08/16/01
SULFATE BY IC	001 REP	S	01LICA54	08/06/01	08/16/01	08/16/01
SULFATE BY IC	001 MS	S	01LICA54	08/06/01	08/16/01	08/16/01
NITRATE NITRITE	001	S	01LN3D44	08/06/01	08/22/01	08/22/01
AMMONIA	001	S	01LAMA40	08/06/01	08/24/01	08/24/01
TOTAL ORGANIC CARBON	001	S	01LTZ022	08/06/01	08/10/01	08/13/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ022	08/06/01	08/10/01	08/13/01
TOTAL ORGANIC CARBON	001 MS	S	01LTZ022	08/06/01	08/10/01	08/13/01
PH	001	S	01LPH055	08/06/01	08/15/01	08/15/01
PH	001 REP	S	01LPH055	08/06/01	08/15/01	08/15/01
B12C69						
% SOLIDS	002	S	01L%S103	08/06/01	08/09/01	08/10/01
CHLORIDE BY IC	002	S	01LICA54	08/06/01	08/16/01	08/16/01
FLUORIDE BY IC	002	S	01LICA54	08/06/01	08/16/01	08/16/01

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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	002	S	01LIC054	08/06/01	08/16/01	08/16/01
NITRATE BY IC	002	S	01LIC054	08/06/01	08/16/01	08/16/01
TOTAL CYANIDE	002	S	01LC075	08/06/01	08/09/01	08/09/01
PHOSPHATE BY IC	002	S	01LICA54	08/06/01	08/16/01	08/16/01
CHROMIUM VI	002	S	01LVI066	08/06/01	08/14/01	08/14/01
SULFATE BY IC	002	S	01LICA54	08/06/01	08/16/01	08/16/01
NITRATE NITRITE	002	S	01LN3D44	08/06/01	08/22/01	08/22/01
AMMONIA	002	S	01LAMA40	08/06/01	08/24/01	08/24/01
TOTAL ORGANIC CARBON	002	S	01LTZ022	08/06/01	08/10/01	08/13/01
PH	002	S	01LPH055	08/06/01	08/15/01	08/15/01
B12C68						
% SOLIDS	003	S	01L%S103	08/02/01	08/09/01	08/10/01
CHLORIDE BY IC	003	S	01LICA54	08/02/01	08/16/01	08/16/01
FLUORIDE BY IC	003	S	01LICA54	08/02/01	08/16/01	08/16/01
NITRITE BY IC	003	S	01LIC054	08/02/01	08/16/01	08/16/01
NITRATE BY IC	003	S	01LIC054	08/02/01	08/16/01	08/16/01
TOTAL CYANIDE	003	S	01LC075	08/02/01	08/09/01	08/09/01
PHOSPHATE BY IC	003	S	01LICA54	08/02/01	08/16/01	08/16/01
CHROMIUM VI	003	S	01LVI066	08/02/01	08/14/01	08/14/01
SULFATE BY IC	003	S	01LICA54	08/02/01	08/16/01	08/16/01
NITRATE NITRITE	003	S	01LN3D44	08/02/01	08/22/01	08/22/01
NITRATE NITRITE	003 REP	S	01LN3D44	08/02/01	08/22/01	08/22/01
NITRATE NITRITE	003 MS	S	01LN3D44	08/02/01	08/22/01	08/22/01
AMMONIA	003	S	01LAMA40	08/02/01	08/24/01	08/24/01
TOTAL ORGANIC CARBON	003	S	01LTZ022	08/02/01	08/10/01	08/13/01
PH	003	S	01LPH055	08/02/01	08/15/01	08/15/01
B12C67						
% SOLIDS	004	S	01L%S103	08/01/01	08/09/01	08/10/01
CHLORIDE BY IC	004	S	01LICA54	08/01/01	08/16/01	08/16/01
FLUORIDE BY IC	004	S	01LICA54	08/01/01	08/16/01	08/16/01
NITRITE BY IC	004	S	01LIC054	08/01/01	08/16/01	08/16/01
NITRATE BY IC	004	S	01LIC054	08/01/01	08/16/01	08/16/01
TOTAL CYANIDE	004	S	01LC075	08/01/01	08/09/01	08/09/01
TOTAL CYANIDE	004 REP	S	01LC075	08/01/01	08/09/01	08/09/01

01A

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	004 MS	S	01LC075	08/01/01	08/09/01	08/09/01
PHOSPHATE BY IC	004	S	01LICA54	08/01/01	08/16/01	08/16/01
CHROMIUM VI	004	S	01LVI066	08/01/01	08/14/01	08/14/01
CHROMIUM VI	004 REP	S	01LVI066	08/01/01	08/14/01	08/14/01
CHROMIUM VI	004 MSD	S	01LVI066	08/01/01	08/14/01	08/14/01
SULFATE BY IC	004	S	01LICA54	08/01/01	08/16/01	08/16/01
NITRATE NITRITE	004	S	01LN3D44	08/01/01	08/22/01	08/22/01
AMMONIA	004	S	01LAMA40	08/01/01	08/24/01	08/24/01
AMMONIA	004 REP	S	01LAMA40	08/01/01	08/24/01	08/24/01
AMMONIA	004 MS	S	01LAMA40	08/01/01	08/24/01	08/24/01
TOTAL ORGANIC CARBON	004	S	01LTZ022	08/01/01	08/10/01	08/13/01
PH	004	S	01LPH055	08/01/01	08/15/01	08/15/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICA54	N/A	08/16/01	08/16/01
CHLORIDE BY IC	MB1 BS	S	01LICA54	N/A	08/16/01	08/16/01
FLUORIDE BY IC	MB1	S	01LICA54	N/A	08/16/01	08/16/01
FLUORIDE BY IC	MB1 BS	S	01LICA54	N/A	08/16/01	08/16/01
NITRITE BY IC	MB1	S	01LIC054	N/A	08/16/01	08/16/01
NITRITE BY IC	MB1 BS	S	01LIC054	N/A	08/16/01	08/16/01
NITRATE BY IC	MB1	S	01LIC054	N/A	08/16/01	08/16/01
NITRATE BY IC	MB1 BS	S	01LIC054	N/A	08/16/01	08/16/01
TOTAL CYANIDE	LCS L	S	01LC075	N/A	08/09/01	08/09/01
TOTAL CYANIDE	LCS L	S	01LC075	N/A	08/09/01	08/09/01
TOTAL CYANIDE	MB1	S	01LC075	N/A	08/09/01	08/09/01
PHOSPHATE BY IC	MB1	S	01LICA54	N/A	08/16/01	08/16/01
PHOSPHATE BY IC	MB1 BS	S	01LICA54	N/A	08/16/01	08/16/01
CHROMIUM VI	MB1	S	01LVI066	N/A	08/14/01	08/14/01
CHROMIUM VI	MB1 BS	S	01LVI066	N/A	08/14/01	08/14/01
CHROMIUM VI	MB1 BSD	S	01LVI066	N/A	08/14/01	08/14/01
SULFATE BY IC	MB1	S	01LICA54	N/A	08/16/01	08/16/01
SULFATE BY IC	MB1 BS	S	01LICA54	N/A	08/16/01	08/16/01
NITRATE NITRITE	MB1	S	01LN3D44	N/A	08/22/01	08/22/01
NITRATE NITRITE	MB1 BS	S	01LN3D44	N/A	08/22/01	08/22/01
AMMONIA	MB1	S	01LAMA40	N/A	08/24/01	08/24/01
AMMONIA	MB1 BS	S	01LAMA40	N/A	08/24/01	08/24/01
AMMONIA	MB1 BSD	S	01LAMA40	N/A	08/24/01	08/24/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	MB1	W	01LTZ022	N/A	08/10/01	08/13/01
TOTAL ORGANIC CARBON	MB1 BS	W	01LTZ022	N/A	08/10/01	08/13/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1449
LVL#: 0108L502

W.O.#: 11343-606-001-9999-00
DateReceived: 08-08-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 solid 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. 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 and Total Organic Carbon samples are dried prior to analysis.

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

08-31-01
Date

njp\i08-502

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 20 pages. (INCLUDES OIA)

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

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 *LVL LOT #: 0108L502*

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12C70	% Solids	97.2	%	0.01	1.0
		Chloride by IC	26.4	MG/KG	6.4	5.0
		Fluoride by IC	12.9 u	MG/KG	12.9	5.0
		Nitrite by IC	34.7	MG/KG	6.43	5.0
		Nitrate by IC	2140	MG/KG	129	100
		Cyanide, Total	0.48 u	MG/KG	0.48	1.0
		Phosphate by IC	121	MG/KG	6.4	5.0
		Chromium VI	0.62	MG/KG	0.41	1.0
		Sulfate by IC	110	MG/KG	6.4	5.0
		Nitrate Nitrite	486	MG/KG	10.3	50.0
		Ammonia, as N	123	MG/KG	2.1	2.0
		Total Organic Carbon	151	MG/KG	144	1.0
		pH	9.5	PH UNIT	0.01	1.0
-002	B12C69	% Solids	97.2	%	0.01	1.0
		Chloride by IC	25.6	MG/KG	6.4	5.0
		Fluoride by IC	12.9 u	MG/KG	12.9	5.0
		Nitrite by IC	34.3	MG/KG	6.43	5.0
		Nitrate by IC	2090	MG/KG	129	100
		Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		Phosphate by IC	149	MG/KG	6.4	5.0
		Chromium VI	0.49	MG/KG	0.41	1.0
		Sulfate by IC	106	MG/KG	6.4	5.0
		Nitrate Nitrite	464	MG/KG	10.2	50.0
		Ammonia, as N	65.2	MG/KG	2.6	2.0
		Total Organic Carbon	889	MG/KG	189	1.0
		pH	9.6	PH UNIT	0.01	1.0
-003	B12C68	% Solids	93.5	%	0.01	1.0
		Chloride by IC	6.9	MG/KG	1.3	1.0
		Fluoride by IC	2.7 u	MG/KG	2.7	1.0
		Nitrite by IC	1.34 u	MG/KG	1.34	1.0
		Nitrate by IC	208	MG/KG	6.68	5.0
		Cyanide, Total	0.44 u	MG/KG	0.44	1.0
		Phosphate by IC	1.6	MG/KG	1.3	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Sulfate by IC	248	MG/KG	6.7	5.0
		Nitrate Nitrite	59.1	MG/KG	2.1	10.0
		Ammonia, as N	2.4	MG/KG	1.6	1.0
		Total Organic Carbon	1060	MG/KG	157	1.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12C68	pH	8.8	PH UNIT	0.01	1.0
-004	B12C67	% Solids	95.4	%	0.01	1.0
		Chloride by IC	5.0	MG/KG	2.6	2.0
		Fluoride by IC	5.2 u	MG/KG	5.2	2.0
		Nitrite by IC	2.62 u	MG/KG	2.62	2.0
		Nitrate by IC	94.4	MG/KG	2.62	2.0
		Cyanide, Total	0.43 u	MG/KG	0.43	1.0
		Phosphate by IC	8.2	MG/KG	2.6	2.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	51.1	MG/KG	2.6	2.0
		Nitrate Nitrite	23.1	MG/KG	1.1	5.0
		Ammonia, as N	3.2	MG/KG	1.2	1.0
		Total Organic Carbon	274	MG/KG	167	1.0
		pH	8.7	PH UNIT	0.01	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICA54-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
		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	01LIC054-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	01LC075-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI066-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3D44-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAMA40-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	01LTZ022-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12C70	Chloride by IC	143	26.4	129	90.6	5.0
		Fluoride by IC	273	8.3	257	102.9	5.0
		Nitrite by IC	157	34.7	129	95.4	5.0
		Nitrate by IC	4890	2140	2570	107.0	100
		Phosphate by IC	253	121	129	102.9	5.0
		Sulfate by IC	241	110	129	102.3	5.0
		Total Organic Carbon	2920	151	2880	96.4	1.0
-003	B12C68	Nitrate Nitrite	114	59.1	53.1	102.6	10.0
-004	B12C67	Cyanide, Total	4.07	0.43u	3.85	105.7	1.0
		Insoluble Chromium VI	1300	0.42u ~~0.002~~	1220	107.3	100
		Ammonia, as N	54.2	3.2	56.9	89.6	1.0
BLANK10	01LICA54-MB1	Chloride by IC	23.4	1.2 u	25.0	93.5	1.0
		Fluoride by IC	54.6	2.5 u	50.0	109.1	1.0
		Phosphate by IC	25.7	1.2 u	25.0	102.8	1.0
		Sulfate by IC	24.4	1.2 u	25.0	97.4	1.0
BLANK10	01LIC054-MB1	Nitrite by IC	23.4	1.25u	25.0	93.6	1.0
		Nitrate by IC	25.2	1.25u	25.0	100.6	1.0
BLANK10	01LVI066-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1130	0.40u	1160	97.3	100
BLANK10	01LN3D44-MB1	Nitrate Nitrite	5.0	0.20u	5.0	100.8	1.0
BLANK10	01LAMA40-MB1	Ammonia, as N	51.9	1.2 u	50.0	103.8	1.0
		Ammonia, as N MSD	52.8	1.2 u	50.0	105.5	1.0
BLANK10	01LTZ022-MB1	Total Organic Carbon	388	20.0 u	400	97.1	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAMA40-MB1	Ammonia, as N	103.8	105.5	1.7

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12C70	% Solids	97.2	97.2	0.031	1.0
		Chloride by IC	26.4	28.5	7.8	5.0
		Fluoride by IC	12.9 u	12.9 u	NC	5.0
		Nitrite by IC	34.7	38.6	10.5	5.0
		Nitrate by IC	2140	2310	7.7	100
		Phosphate by IC	121	113	6.6	5.0
		Sulfate by IC	110	120	9.3	5.0
		Total Organic Carbon	151	148	2.2	1.0
		pH	9.5	9.5	0.3	1.0
-003REP	B12C68	Nitrate Nitrite	59.1	57.2	3.2	10.0
-004REP	B12C67	Cyanide, Total	0.43u	0.41u	NC	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Ammonia, as N	3.2	3.9	20.0	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC075-LCS1	Cyanide, Total LCS	2.00	2.0	MG/KG	100
LCSS2	01LC075-LCS2	Cyanide, Total LCS	9.87	10.0	MG/KG	98.7

Lionville Laboratory Use Only

01081502

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC

14

Client: TMU- Hanford B01-058

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: 8-8-01 Date Due: 9-7-01

		A	B		C	D
Refrigerator #		S	S		S	S
#/Type Container	Liquid					
	Solid	1AG	1AG		1AG	1AG
Volume	Liquid					
	Solid	100	500		100	1L
Preservatives		-	-		-	-

ANALYSES REQUESTED →

ORGANIC				INORG		
VOA	BNA	Pest/PCB	Herb	Metal	CN	Chrom

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	Mercury	Metals	Herb 8-8-01	IC Cl	IC F	IC CO_3	IC NO_2	IC PO_4	IC SO_4	IC NH_3N	IC NO_3N	IC CT	IC PH	IC NTU
001	B12C70			S	8-6-01	0430	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
002	69						✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
003	68				8-2-01	0110	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
004	67				8-1-01	0215	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Special Instructions: Saf B01-058
Run Matrix QC

DATE/REVISIONS:
Met① 1. Cd, Cr, Cu, Ni, Ag, Pb
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235 7954 6200
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. 4.9 °C

Relinquished by	Received by	Date	Time
FedEx	Thepper	8-8-01	0936

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL RE-WRITTEN		

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

NOTES:

4235 7954 6200

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-147	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-38/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC 96-006 (1 of 7)	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: DSA 7/18/01 ~~TMA/RECRA~~ LIONVILLE	Offsite Property No.: A010320		Bill of Lading/Air Bill No.: 4235 7954 - 6200	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment. RT 8/7/01

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	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. DSA 7/18/01				
Sample No. / Matrix * / Sample Date / Sample Time											
B12C70 / SOIL / 8/6/01 / 0430	X	X	X	X					B12B	V1	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0615 8/6/01	Ref 1A	0615 8/6/01
Ref 1A 3728	8-7-01 0900	R Thore	0900 8-7-01
R Thore	8-7-01 0900	FEDEX	
FEDEX	8-8-01 0930	T Bryant	8-8-01 0930

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~~ GST 8/6/01
~~(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~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-146	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-38/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC96-0666 (1of7)	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: DSA 7/18/01 ~~TMA/REORA~~ LIONVILLE	Offsite Property No.: A-0320		Bill of Lading/Air Bill No.: 4235795 4-6200	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment.

RT 8/7/01

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 8/6/01	See item (4) in Special Instructions. GST 8/6/01		
Sample No.	Matrix *	Sample Date	Sample Time								TIE TO:
B12C69	SOIL	8/6/01	0430	X	X	X	X				B12BV1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	8/6/01 0615	Ref 1A	8/6/01 0615
Ref 1A 3728	8.7.01 0900	R Thorney / R Thorney	8.7.01 0900
R Thorney	8.7.01 0900	FED EX	
FED EX	8-8-01 0930	Theppel	8-8-01 0930

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~~ GST 8/6/01
~~(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~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-145	Page 1 of 1

Collector: Thomas G./Watson D. / Nielson	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: 8RC 96-066 (1of7)	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/RECRA~~ LIONVILLE	Offsite Property No.: AØ10320	Bill of Lading/Air Bill No.: 4235 7954 — 6206	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological Field Instrument - background

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 8/2/01. Collector not available to relenquish samples on 8/7/01 for shipment.

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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. GST 7/31/01	See item (4) in Special Instructions. DSA 7/18/01			TPCTO
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			
B12C68	SOIL	8-2-01	0110	X	X	X	X						B12BT5

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Greg Thomas / Greg Thomas	8/2/01 0855	Received By/Stored In: Ref 1C	8/2/01 0855
Relinquished By/Removed From: Ref 1C 3728	8.7.01 0900	Received By/Stored In: R Thorsen	8.7.01 0900
Relinquished By/Removed From: R Thorsen	8.7.01 0900	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	8-8-01 0930	Received By/Stored In: T. Appel	8-8-01 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, 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~~ GST 7/31/01
(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~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-144	Page 1 of 1

Collector: Thomas G./Watson D. / Nielson	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: ERC 96-006	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA/RECRA~~ LIONVILLE 7/18/01	Offsite Property No.: A 010320	Bill of Lading/Air Bill No.: 4235 7954 -6200	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological < .5 mR Field instrument background
Mercury Vapor 0.598 ppm
Special Handling and/or Storage

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 7/31/01	See item (4) in Special Instructions. DSA 7/18/01			Tic to
Sample No.	Matrix *	Sample Date	Sample Time							
B12C67	SOIL	08/01/01	0245	X	X	X	X			B12BT4

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Greg Thomas/Greg Thomas, Date/Time: 8/01/01 0545	Received By/Stored In: Ref 1B, Date/Time: 8/01/01 0545	
Relinquished By/Removed From: Ref 1B 3728 8.7.01, Date/Time: 0900	Received By/Stored In: RTC R Thorey, Date/Time: 0900 8.7.01	
Relinquished By/Removed From: R.T. R Thorey, Date/Time: 0900 8.7.01	Received By/Stored In: FED EX, Date/Time:	
Relinquished By/Removed From: FEDEX 8.8.01 0930, Date/Time:	Received By/Stored In: Bryant 8-8-01 0930, Date/Time:	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	

SPECIAL INSTRUCTIONS

(1) 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~~ GST 7/31/01
~~(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~~ DSA 7/18/01

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/01/01.
Collector not available to relenquish samples on 8/07/01 for shipment. RT 8/7/01

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)

Figure 1. Sample Check-in List

Date/Time Received: 8-8-01 / 0930

SDG#: 01081502

Work Order Number: _____ SAF# B01-058

Shipping Container ID: EBC-910-0060 Chain of Custody # B01-058-144, 145, 146, 147

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 4.9°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 16
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: T Kippel LWT 8/8/01 Date: 8/8/01

Telephoned to: _____ On _____ By _____

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12C70						
SILVER, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
SILVER, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
SILVER, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
CADMIUM, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
CADMIUM, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
CADMIUM, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
CHROMIUM, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
CHROMIUM, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
CHROMIUM, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
COPPER, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
COPPER, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
COPPER, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
MERCURY, TOTAL	001	S	01C0259	08/06/01	08/23/01	08/24/01
MERCURY, TOTAL	001 REP	S	01C0259	08/06/01	08/23/01	08/24/01
MERCURY, TOTAL	001 MS	S	01C0259	08/06/01	08/23/01	08/24/01
NICKEL, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
NICKEL, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
NICKEL, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
LEAD, TOTAL	001	S	01L0534	08/06/01	08/23/01	08/29/01
LEAD, TOTAL	001 REP	S	01L0534	08/06/01	08/23/01	08/29/01
LEAD, TOTAL	001 MS	S	01L0534	08/06/01	08/23/01	08/29/01
B12C69						
SILVER, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
CADMIUM, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
CHROMIUM, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
COPPER, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
MERCURY, TOTAL	002	S	01C0259	08/06/01	08/23/01	08/24/01
NICKEL, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
LEAD, TOTAL	002	S	01L0534	08/06/01	08/23/01	08/29/01
B12C68						
SILVER, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1449

DATE RECEIVED: 08/08/01 LVL LOT # :0108L502

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01
CHROMIUM, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01
COPPER, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01
MERCURY, TOTAL	003	S	01C0259	08/02/01	08/23/01	08/24/01
NICKEL, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01
LEAD, TOTAL	003	S	01L0534	08/02/01	08/23/01	08/29/01
B12C67						
SILVER, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01
CADMIUM, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01
CHROMIUM, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01
COPPER, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01
MERCURY, TOTAL	004	S	01C0259	08/01/01	08/23/01	08/24/01
NICKEL, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01
LEAD, TOTAL	004	S	01L0534	08/01/01	08/23/01	08/29/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
SILVER, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01
CADMIUM LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
CADMIUM, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01
CHROMIUM LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
CHROMIUM, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01
COPPER LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
COPPER, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01
MERCURY LABORATORY	LC1 BS	S	01C0259	N/A	08/23/01	08/24/01
MERCURY, TOTAL	MB1	S	01C0259	N/A	08/23/01	08/24/01
NICKEL LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
NICKEL, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01
LEAD LABORATORY	LC1 BS	S	01L0534	N/A	08/23/01	08/29/01
LEAD, TOTAL	MB1	S	01L0534	N/A	08/23/01	08/29/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0108L502
SDG/SAF#: H1449/B01-058

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

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 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 16 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

gmb/m08-502

09-12-0

Date

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 01082502

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 Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12C70	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	12.7	MG/KG	0.14	1.0
		Copper, Total	13.4	MG/KG	0.05	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	15.4	MG/KG	0.17	1.0
		Lead, Total	3.1	MG/KG	0.25	1.0
-002	B12C69	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	8.4	MG/KG	0.14	1.0
		Copper, Total	8.8	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.0	MG/KG	0.17	1.0
		Lead, Total	3.4	MG/KG	0.24	1.0
-003	B12C68	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.10	MG/KG	0.03	1.0
		Chromium, Total	11.5	MG/KG	0.15	1.0
		Copper, Total	15.1	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.7	MG/KG	0.18	1.0
		Lead, Total	8.0	MG/KG	0.26	1.0
-004	B12C67	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Chromium, Total	11.6	MG/KG	0.15	1.0
		Copper, Total	12.9	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	12.1	MG/KG	0.18	1.0
		Lead, Total	6.8	MG/KG	0.25	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0534-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 u	MG/KG	0.05	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.53	MG/KG	0.24	1.0
BLANK1	01C0259-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12C70	Silver, Total	3.9	0.05u	5.1	76.5	1.0
		Cadmium, Total	4.8	0.09	5.1	92.4	1.0
		Chromium, Total	29.2	12.7	20.6	80.1	1.0
		Copper, Total	33.8	13.4	25.7	79.4	1.0
		Mercury, Total	0.14	0.01u	0.14	97.9	1.0
		Nickel, Total	58.2	15.4	51.5	83.1	1.0
		Lead, Total	50.4	3.1	51.5	91.8	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12C70	Silver, Total	0.05u	0.05u	NC	1.0
		Cadmium, Total	0.09	0.13	36.6	1.0
		Chromium, Total	12.7	9.6	27.8	1.0
		Copper, Total	13.4	9.2	37.2	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Nickel, Total	15.4	11.6	28.1	1.0
		Lead, Total	3.1	2.8	10.2	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/30/01

CLIENT: TNUHANFORD B01-058 H1449 LVL LOT #: 0108L502

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0534-LC1	Silver, LCS	47.8	50.0	MG/KG	95.6
		Cadmium, LCS	22.3	25.0	MG/KG	89.2
		Chromium, LCS	45.7	50.0	MG/KG	91.4
		Copper, LCS	114	125	MG/KG	91.2
		Nickel, LCS	180	200	MG/KG	89.9
		Lead, LCS	221	250	MG/KG	88.6
LCS1	01C0259-LC1	Mercury, LCS	2.4	2.5	MG/KG	97.6

Lionville Laboratory Use Only

01081502

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TPU-Hanford-Bol-058

Est. Final Proj. Sampling Date:

Project #: [illegible]

Project Contact/Phone #:

Lionville Laboratory Project Manager: OS

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-8-01 Date Due: 9-7-01

		A	B		C	D				
Refrigerator #		5	5		5	5				
#/Type Container	Liquid									
	Solid	1 Pg	1 Pg		1 Pg	1 Pg				
Volume	Liquid	120	500		100	1L				
	Solid									
Preservatives										

ANALYSES REQUESTED →

ORGANIC						INORG								
VOA	BNA	Pest/PCB	Herb			Merc.	Metal	CN	Chrom.					

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 - Liquids; WI - Wipe; X - Other; P - Plant

Lab ID	Client ID/Description	Matrix OC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected																
001	B1-C30			S	8-8-01	0930							MHG70	Met(1)	Temp 7.8-8-01	ICP70	ICCL ICFL ICCO3	ICCR2 ICPA ICSH	INH30	INS02	IOCT	IPH	ICN70
002	1 69																					
003	1 68				8-8-01	0930																
004	1 61				8-8-01	0930																

Special Instructions: Saf Bol-058

Run Matrix QC

DATE/REVISIONS:

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

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
FedEx	TBoppel	8-8-01	0936

Relinquished by	Received by	Date	Time

COMPOSITE ORIGINAL

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

NOTES:

4235 7954 6200

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235795416200
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. 4.9 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-147	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: ERC96-0006 (1 of 7)	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA/RECRA~~ DSA 7/18/01 LIONVILLE	Offsite Property No.: A010320	Bill of Lading/Air Bill No.: 4235 7954 - 6200	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment. RT 8/7/01

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 8/6/01	See item (4) in Special Instructions. DSA 7/18/01			
Sample No.	Matrix *	Sample Date	Sample Time									
B12C70	SOIL	8/6/01	0430	X	X	X	X				B12B	V1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Bryan Thomas	8/6/01 0615	Ref 1A	8/6/01 0615
Ref 1A 3728	8/7/01 0900	R Thore	8/7/01 0900
R Thore	8/7/01 0900	FEDEX	
FEDEX	8-8-01 0930	Rappl	8-8-01 0930

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 - 3UTPH-D~~ GST 8/6/01
~~(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 - TD; Isotopic Uranium~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-146	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: ERC96-0066 (1 of 7)	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/RCRA~~ LIONVILLE	Offsite Property No.: A-010320		Bill of Lading/Air Bill No.: 4235795 4-6200

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment.

RT 8/7/01

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 8/6/01	See item (4) in Special Instructions. GST 8/6/01	TIE TO:
Sample No.	Matrix *	Sample Date	Sample Time								
B12C69	SOIL	8/6/01	0430	X	X	X	X				B12BV1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	8/6/01 0615	Ref 1A	8/6/01 0615
Ref 1A 3728	8/7/01 0900	R Thorey / R Thorey	8/7/01 0900
R Thorey / R Thorey	8/7/01 0900	FED EX	
FedEx	8-8-01 0930	Thepd	8-8-01 0930
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 - W/TPH-D~~ GST 8/6/01
~~(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~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-145	Page 1 of 1

Collector: Thomas G./Watson D. / Nielson	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: ERC 96-066 (1 of 7)	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/RECRA~~ LIONVILLE	Offsite Property No.: AØ10320	Bill of Lading/Air Bill No.: 4235795 4 — 6206	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological Field Instrument - background

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 8/2/01. Collector not available to relenquish samples on 8/7/01 for shipment.

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 7/31/01	See item (4) in Special Instructions. DSA 7/18/01			TCTO	
Sample No.	Matrix *	Sample Date	Sample Time								
B12C68	SOIL	8-2-01	0110	X	X	X	X			B12BT5	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Greg Thomas	8/2/01 0855	Ref 1C	8/2/01 0855
Ref 1C 3728	8.7.01 0900	R Thoren	8.7.01 0900
R Thoren	8.7.01 0900	FED EX	
FED EX	8-8-01 0930	T Rippel	8-8-01 0930

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~~ GST 7/31/01
(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~~ DSA 7/18/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-144	Page 1 of 1

Collector: Thomas G./Watson D. / Nielson	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-38/200 E	SAF No.: B01-058	
Ice Chest No.: ERC 96-006	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/RBCRA~~ LIONVILLE	Offsite Property No.: A 00320	Bill of Lading/Air Bill No.: 4235 7954 -6200	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radiological < .5 mR Field instrument background

Mercury Vapor 0.598 ppm

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time	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. GST 7/31/01	See item (4) in Special Instructions. DSA 7/18/01		Tie to
B12C67	SOIL	08/01/01	0245	X	X	X	X					B12BT4

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0545 8/01/01	Ref 1B	8/01/01 0545
Ref 1B 3728	0900 8.7.01	R Thorell	0900 8.7.01
R Thorell	0900 8.7.01	FED EX	
FedEx	8.8.01 0930	Bepal	8-8-01 0930

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~~ GST 7/31/01

~~(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~~ DSA 7/18/01

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/01/01.

Collector not available to relenquish samples on 8/07/01 for shipment. RT 8/7/01

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)

EBERLINE
SERVICES

October 29, 2001

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

Reference: **P.O. #630**
Eberline Services R1-08-042-7049, SDG H1449

Dear Ms. Kessner:

Enclosed is the data report for four solid samples designated under SAF No. B01-058 received at Eberline Services on August 8, 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

OCT 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 H1449 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 October 17 and 26, 2001.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Total Uranium 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 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.10 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.11 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

10/29/01

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 H1449

SDG	7049
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H1449

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

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

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	10/26/01

SDG 7049
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1449

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 10/26/01

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.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1449

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12C67	B-38/200 E	SOLID		R108042-01	B01-058	B01-058-144	08/01/01 02:45
B12C68	B-38/200 E	SOLID		R108042-02	B01-058	B01-058-145	08/02/01 01:10
B12C69	B-38/200 E	SOLID		R108042-03	B01-058	B01-058-146	08/06/01 04:30
B12C70	B-38/200 E	SOLID		R108042-04	B01-058	B01-058-147	08/06/01 04:30
Method Blank		SOLID		R108042-06	B01-058		
Lab Control Sample		SOLID		R108042-05	B01-058		
Duplicate (R108042-03)	B-38/200 E	SOLID		R108042-07	B01-058		08/06/01 04:30
Spike (R108042-03)	B-38/200 E	SOLID		R108042-08	B01-058		08/06/01 04:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1449

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
7049	B01-058-144	B12C67	SOLID	95.4	1003 g		08/08/01	7	R108042-01	7049-001
	B01-058-145	B12C68	SOLID	94.4	1111 g		08/08/01	6	R108042-02	7049-002
	B01-058-146	B12C69	SOLID	96.8	1130 g		08/08/01	2	R108042-03	7049-003
	B01-058-147	B12C70	SOLID	96.9	997.2 g		08/08/01	2	R108042-04	7049-004
		Method Blank	SOLID						R108042-06	7049-006
		Lab Control Sample	SOLID						R108042-05	7049-005
		Duplicate (R108042-03)	SOLID	96.8	1130 g		08/08/01	2	R108042-07	7049-007
		Spike (R108042-03)	SOLID		1130 g		08/08/01	2	R108042-08	7049-008

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1449

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6994-166	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	6994-166	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-166	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6994-166	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6994-166	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-166	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6994-166	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-166	15.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6994-166	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6994-166	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	6994-166	10.0	4			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6994-166	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 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1449

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12C67			R108042-01	7049-001	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	08/01/01	7049-001	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
B01-058-144	B01-058		08/08/01	7049-001	GAM		08/31/01	10/26/01	MCM	Gamma Scan
				7049-001	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-001	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-001	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-001	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-001	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-001	TC		09/18/01	09/25/01	MCM	Technetium 99 in Soil
				7049-001	TH		08/23/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-001	U		09/06/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-001	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil
B12C68			R108042-02	7049-002	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	08/02/01	7049-002	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
B01-058-145	B01-058		08/08/01	7049-002	GAM		08/31/01	10/26/01	MCM	Gamma Scan
				7049-002	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-002	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-002	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-002	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-002	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-002	TC		09/18/01	09/25/01	MCM	Technetium 99 in Soil
				7049-002	TH		08/22/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-002	U		09/06/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-002	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil
B12C69			R108042-03	7049-003	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	08/06/01	7049-003	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
B01-058-146	B01-058		08/08/01	7049-003	GAM		09/10/01	10/26/01	MCM	Gamma Scan
				7049-003	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-003	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-003	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-003	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-003	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-003	TC		09/21/01	10/17/01	MCM	Technetium 99 in Soil
				7049-003	TH		08/24/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-003	U		09/06/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-003	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1449

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12C70			R108042-04	7049-004	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	08/06/01	7049-004	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
B01-058-147	B01-058		08/08/01	7049-004	GAM		08/31/01	10/26/01	MCM	Gamma Scan
				7049-004	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-004	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-004	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-004	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-004	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-004	TC		09/24/01	10/17/01	MCM	Technetium 99 in Soil
				7049-004	TH		08/22/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-004	U		09/12/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-004	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil
Method Blank			R108042-06	7049-006	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
		SOLID		7049-006	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
	B01-058			7049-006	GAM		08/31/01	10/26/01	MCM	Gamma Scan
				7049-006	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-006	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-006	NP		09/10/01	09/25/01	MCM	Neptunium in Soil
				7049-006	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-006	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-006	TC		09/25/01	10/17/01	MCM	Technetium 99 in Soil
				7049-006	TH		08/23/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-006	U		09/12/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-006	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil
Lab Control Sample			R108042-05	7049-005	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
		SOLID		7049-005	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
	B01-058			7049-005	GAM		08/31/01	10/26/01	MCM	Gamma Scan
				7049-005	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-005	NI_L		08/27/01	09/25/01	MCM	Nickel 63 in Soil
				7049-005	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-005	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-005	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-005	TC		09/18/01	10/17/01	MCM	Technetium 99 in Soil
				7049-005	TH		08/22/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-005	U		09/12/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-005	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil

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

SAMPLE DELIVERY GROUP H1449

SDG 7049
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1449

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R108042-03)			R108042-07	7049-007	AM		08/23/01	09/25/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	08/06/01	7049-007	C		09/12/01	10/26/01	MCM	Carbon 14 in Soil
	B01-058		08/08/01	7049-007	GAM		10/24/01	10/26/01	MCM	Gamma Scan
				7049-007	H		08/28/01	09/25/01	MCM	Tritium in Soil
				7049-007	NI_L		08/28/01	09/25/01	MCM	Nickel 63 in Soil
				7049-007	NP		09/07/01	09/25/01	MCM	Neptunium in Soil
				7049-007	PU		08/24/01	09/25/01	MCM	Plutonium, Isotopic in Solids
				7049-007	SR		08/21/01	09/25/01	MCM	Total Strontium in Soil
				7049-007	TC		09/25/01	10/17/01	MCM	Technetium 99 in Soil
				7049-007	TH		08/24/01	09/25/01	MCM	Thorium, Isotopic in Soil
				7049-007	U		09/11/01	09/25/01	MCM	Uranium, Isotopic in Soil
				7049-007	U_T		09/07/01	09/25/01	MCM	Uranium, Total in Soil
Spike (R108042-03)			R108042-08	7049-008	H		08/28/01	09/25/01	MCM	Tritium in Soil
B-38/200 E		SOLID	08/06/01							
	B01-058		08/08/01							

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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-06

Method Blank

METHOD BLANK

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-06	Client sample id	Method Blank		
Dept sample id	7049-006	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	-0.171	0.17	0.30	400	U	H
Carbon 14	14762-75-5	-1.22	2.8	4.7	50	U	C
Nickel 63	13981-37-8	0.429	1.1	1.8	30	U	NI_L
Total Strontium	SR-RAD	-0.125	0.13	0.30	1.0	U	SR
Americium 241	14596-10-2	-0.005	0.032	0.040	1.0	U	AM
Technetium 99	14133-76-7	-0.041	0.076	0.34	15	U	TC
Thorium 228	14274-82-9	0.229	0.34	0.71		U	TH
Thorium 230	14269-63-7	-0.229	0.23	0.55	1.0	U	TH
Thorium 232	TH-232	0.057	0.11	0.44	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	0.10	U	U_T
Uranium 233	U-233/234	-0.038	0.018	0.047	1.0	U	U
Uranium 235	15117-96-1	-0.018	0.014	0.044	1.0	U	U
Uranium 238	U-238	-0.009	0.012	0.028	1.0	U	U
Neptunium 237	13994-20-2	0.033	0.038	0.052	1.0	U	NP
Plutonium 238	13981-16-3	0.037	0.074	0.28	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.074	0.28	1.0	U	PU
Potassium 40	13966-00-2	U		0.47		U	GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	U		0.055	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.077	0.10	U	GAM
Thorium 228	14274-82-9	U		0.042		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.10		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	10/26/01

B L A N K , c o n t .

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-06	Client sample id	Method Blank		
Dept sample id	7049-006	Material/Matrix		SOLID	
		SAF No	B01-058		

QC-BLANK #39455

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7049
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1449
Case no No. 630

Lab sample id R108042-05
Dept sample id 7049-005

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	28.9	0.65	0.36	400	J	H	24.8	0.99	116	81-119	80-120
Carbon 14	10200	100	12	50		C	11300	450	90	85-115	80-120
Nickel 63	253	4.3	1.8	30		NI_L	264	11	96	84-116	80-120
Total Strontium	23.1	0.88	0.25	1.0		SR	23.0	0.92	100	83-117	80-120
Americium 241	19.8	0.90	0.065	1.0		AM	21.0	0.84	94	89-111	80-120
Technetium 99	131	2.4	0.41	15		TC	131	5.2	100	84-116	80-120
Thorium 230	45.1	4.2	0.55	1.0		TH	44.8	1.8	101	83-117	80-120
Total Uranium (ug/g)	16.7	2.3	0.029	0.10		U_T	16.5	0.66	101	74-126	80-120
Uranium 233	18.6	1.7	0.86	1.0		U	19.3	0.77	96	84-116	80-120
Uranium 235	15.9	1.6	0.19	1.0		U	15.7	0.63	101	82-118	80-120
Uranium 238	21.8	2.0	0.82	1.0		U	21.0	0.84	104	83-117	80-120
Neptunium 237	25.8	3.1	0.67	1.0		NP	23.8	0.95	108	78-122	80-120
Plutonium 238	28.2	3.3	0.31	1.0		PU	27.2	1.1	104	79-121	80-120
Plutonium 239/240	31.8	3.7	0.31	1.0		PU	29.0	1.2	110	78-122	80-120
Cobalt 60	1.56	0.095	0.033	0.050		GAM	1.52	0.061	103	74-126	80-120
Cesium 137	1.84	0.090	0.055	0.10		GAM	1.72	0.069	107	74-126	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS #39454

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-07 B12C69

DUPLICATE

SDG	7049			Client/Case no	Hanford SDG H1449
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R108042-07	Lab sample id	R108042-03	Client sample id	B12C69
Dept sample id	7049-007	Dept sample id	7049-003	Location/Matrix	B-38/200 E SOLID
		Received	08/08/01	Collected/Weight	08/06/01 04:30 1130 g
% solids	96.8	% solids	96.8	Custody/SAF No	B01-058-146 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	27.4	0.31	0.093	400	J	H	28.7	0.33	0.10	J	5	21
Carbon 14	-0.228	2.7	4.5	50	U	C	-1.17	2.6	4.4	U	-	
Nickel 63	1.61	1.2	1.9	30	U	NI_L	0.814	1.1	1.9	U	-	
Total Strontium	0.055	0.13	0.25	1.0	U	SR	0.033	0.12	0.23	U	-	
Americium 241	-0.012	0.035	0.057	1.0	U	AM	0.007	0.053	0.089	U	-	
Technetium 99	1.65	0.18	0.38	15	J	TC	1.90	0.19	0.36	J	14	31
Thorium 228	0.459	0.31	0.37			TH	1.26	0.47	0.47		93	99
Thorium 230	0.724	0.38	0.37	1.0	J	TH	0.496	0.38	0.29	J	37	133
Thorium 232	0.648	0.31	0.29	1.0	J	TH	0.382	0.23	0.29	J	52	113
Total Uranium (ug/g)	3.00	0.41	0.029	0.10		U_T	2.90	0.39	0.029		3	35
Uranium 233	0.821	0.29	0.16	1.0	J	U	0.754	0.30	0.22	J	9	80
Uranium 235	0.050	0.050	0.19	1.0	U	U	0.070	0.070	0.27	U	-	
Uranium 238	0.964	0.29	0.16	1.0	J	U	0.782	0.30	0.22	J	21	72
Neptunium 237	0.059	0.059	0.075	1.0	U	NP	0	0.10	0.15	U	-	
Plutonium 238	0	0.075	0.29	1.0	U	PU	0.051	0.21	0.49	U	-	
Plutonium 239/240	0	0.075	0.29	1.0	U	PU	0.051	0.10	0.39	U	-	
Potassium 40	16.2	0.80	0.32			GAM	15.4	0.65	0.26		5	33
Cobalt 60	U		0.10	0.050	U	GAM	0.056	0.030	0.030		56	204
Cesium 137	0.168	0.036	0.039	0.10		GAM	0.102	0.030	0.031		49	62
Radium 226	0.554	0.070	0.066	0.10		GAM	0.438	0.050	0.049		23	41
Radium 228	0.762	0.16	0.17	0.20		GAM	0.741	0.12	0.12		3	51
Europium 152	U		0.079	0.10	U	GAM	U		0.070	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.10	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.088	U	-	
Thorium 228	0.681	0.041	0.041			GAM	0.727	0.036	0.034		7	34
Thorium 232	0.762	0.16	0.17			GAM	0.741	0.12	0.12		3	51
Uranium 235	U		0.12		U	GAM	U		0.12	U	-	
Uranium 238	U		4.3		U	GAM	U		3.6	U	-	

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/26/01

DUPLICATE, cont.

SDG	7049			Client/Case no	Hanford SDG H1449
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108042-07	Lab sample id	R108042-03	Client sample id	B12C69
Dept sample id	7049-007	Dept sample id	7049-003	Location/Matrix	B-38/200 E SOLID
		Received	08/08/01	Collected/Weight	08/06/01 04:30 1130 g
% solids	96.8	% solids	96.8	Custody/SAF No	B01-058-146 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
Americium 241	U		0.24		U	GAM	U		0.12	U	-	

200-TW-1 & 2 - Soil Sampling

QC-DUP#3 39456

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-08 B12C69

MATRIX SPIKE

SDG	7049			Client/Case no	Hanford SDG H1449
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R108042-08	Lab sample id	R108042-03	Client sample id	B12C69
Dept sample id	7049-008	Dept sample id	7049-003	Location/Matrix	B-38/200 E SOLID
		Received	08/08/01	Collected/Weight	08/06/01 04:30 1130 g
		% solids	96.8	Custody/SAF No	B01-058-146 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	78.1	0.79	0.15	400	JX	H	53.3	2.1	28.7	0.33	93	76-124	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#3 39457

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-01 B12C67

DATA SHEET

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-01	Client sample id	B12C67		
Dept sample id	7049-001	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/01/01 02:45	1003 g	
% solids	95.4	Custody/SAF No	B01-058-144	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	0.097	400	U	H
Carbon 14	14762-75-5	0.766	2.8	4.6	50	U	C
Nickel 63	13981-37-8	0.310	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	0.175	0.13	0.23	1.0	U	SR
Americium 241	14596-10-2	0.035	0.046	0.055	1.0	U	AM
Technetium 99	14133-76-7	-0.100	0.17	0.60	15	U	TC
Thorium 228	14274-82-9	0.431	0.29	0.37			TH
Thorium 230	14269-63-7	0.621	0.48	0.46	1.0	J	TH
Thorium 232	TH-232	0.621	0.38	0.37	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	1.60	0.22	0.029	0.10		U_T
Uranium 233	U-233/234	0.667	0.34	0.26	1.0	J	U
Uranium 235	15117-96-1	0	0.081	0.31	1.0	U	U
Uranium 238	U-238	0.667	0.27	0.26	1.0	J	U
Neptunium 237	13994-20-2	0.046	0.092	0.14	1.0	U	NP
Plutonium 238	13981-16-3	0	0.059	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.059	0.22	1.0	U	PU
Potassium 40	13966-00-2	14.0	1.2	0.61			GAM
Cobalt 60	10198-40-0	U		0.066	0.050	U	GAM
Cesium 137	10045-97-3	1.82	0.11	0.071	0.10		GAM
Radium 226	13982-63-3	0.594	0.14	0.13	0.10		GAM
Radium 228	15262-20-1	0.695	0.24	0.27	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.776	0.066	0.064			GAM
Thorium 232	TH-232	0.695	0.24	0.27			GAM
Uranium 235	15117-96-1	U		0.19		U	GAM
Uranium 238	U-238	U		8.4		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-01 B12C67

DATA SHEET, cont

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-01	Client sample id	B12C67		
Dept sample id	7049-001	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/01/01 02:45	1003 g	
% solids	95.4	Custody/SAF No	B01-058-144	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		0.089		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-02 B12C68

DATA SHEET

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-02	Client sample id	B12C68		
Dept sample id	7049-002	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/02/01 01:10	1111 g	
% solids	94.4	Custody/SAF No	B01-058-145	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.008	0.065	0.11	400	U	H
Carbon 14	14762-75-5	-0.971	2.5	4.2	50	U	C
Nickel 63	13981-37-8	0.517	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.060	0.11	0.24	1.0	U	SR
Americium 241	14596-10-2	0.022	0.033	0.043	1.0	U	AM
Technetium 99	14133-76-7	-0.040	0.16	0.55	15	U	TC
Thorium 228	14274-82-9	0.839	0.42	0.46			TH
Thorium 230	14269-63-7	0.587	0.42	0.32	1.0	J	TH
Thorium 232	TH-232	0.587	0.34	0.32	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	1.69	0.23	0.029	0.10		U_T
Uranium 233	U-233/234	0.448	0.26	0.24	1.0	J	U
Uranium 235	15117-96-1	0	0.077	0.30	1.0	U	U
Uranium 238	U-238	0.544	0.26	0.24	1.0	J	U
Neptunium 237	13994-20-2	0	0.077	0.12	1.0	U	NP
Plutonium 238	13981-16-3	0	0.079	0.30	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.079	0.30	1.0	U	PU
Potassium 40	13966-00-2	14.5	1.1	0.36			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.036	0.10	U	GAM
Radium 226	13982-63-3	U		0.12	0.10	U	GAM
Radium 228	15262-20-1	0.974	0.18	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.079	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.080	0.10	U	GAM
Thorium 228	14274-82-9	0.840	0.050	0.043			GAM
Thorium 232	TH-232	0.974	0.18	0.16			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		4.3		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-02 B12C68

DATA SHEET, cont

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-02	Client sample id	B12C68		
Dept sample id	7049-002	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/02/01 01:10	1111 g	
% solids	94.4	Custody/SAF No	B01-058-145	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		0.046		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-03 B12C69

DATA SHEET

SDG	7049	Client/Case no	Hanford SDG H1449
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108042-03	Client sample id	B12C69
Dept sample id	7049-003	Location/Matrix	B-38/200 E SOLID
Received	08/08/01	Collected/Weight	08/06/01 04:30 1130 g
% solids	96.8	Custody/SAF No	B01-058-146 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	28.7	0.33	0.10	400	J	H
Carbon 14	14762-75-5	-1.17	2.6	4.4	50	U	C
Nickel 63	13981-37-8	0.814	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	0.033	0.12	0.23	1.0	U	SR
Americium 241	14596-10-2	0.007	0.053	0.089	1.0	U	AM
Technetium 99	14133-76-7	1.90	0.19	0.36	15	J	TC
Thorium 228	14274-82-9	1.26	0.47	0.47			TH
Thorium 230	14269-63-7	0.496	0.38	0.29	1.0	J	TH
Thorium 232	TH-232	0.382	0.23	0.29	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	2.90	0.39	0.029	0.10		U_T
Uranium 233	U-233/234	0.754	0.30	0.22	1.0	J	U
Uranium 235	15117-96-1	0.070	0.070	0.27	1.0	U	U
Uranium 238	U-238	0.782	0.30	0.22	1.0	J	U
Neptunium 237	13994-20-2	0	0.10	0.15	1.0	U	NP
Plutonium 238	13981-16-3	0.051	0.21	0.49	1.0	U	PU
Plutonium 239/240	PU-239/240	0.051	0.10	0.39	1.0	U	PU
Potassium 40	13966-00-2	15.4	0.65	0.26			GAM
Cobalt 60	10198-40-0	0.056	0.030	0.030	0.050		GAM
Cesium 137	10045-97-3	0.102	0.030	0.031	0.10		GAM
Radium 226	13982-63-3	0.438	0.050	0.049	0.10		GAM
Radium 228	15262-20-1	0.741	0.12	0.12	0.20		GAM
Europium 152	14683-23-9	U		0.070	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Thorium 228	14274-82-9	0.727	0.036	0.034			GAM
Thorium 232	TH-232	0.741	0.12	0.12			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.6		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-03 **B12C69**

DATA SHEET, cont

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-03	Client sample id	B12C69		
Dept sample id	7049-003	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/06/01 04:30	1130 g	
% solids	96.8	Custody/SAF No	B01-058-146	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		0.12		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

R108042-04 **B12C70**

DATA SHEET

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-04	Client sample id	B12C70		
Dept sample id	7049-004	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/06/01 04:30	997.2 g	
% solids	96.9	Custody/SAF No	B01-058-147	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	29.0	0.35	0.11	400	J	H
Carbon 14	14762-75-5	2.11	2.5	4.1	50	U	C
Nickel 63	13981-37-8	0.932	1.2	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.032	0.10	0.22	1.0	U	SR
Americium 241	14596-10-2	0.018	0.072	0.12	1.0	U	AM
Technetium 99	14133-76-7	1.93	0.22	0.39	15	J	TC
Thorium 228	14274-82-9	1.84	0.58	0.36			TH
Thorium 230	14269-63-7	0.894	0.47	0.45	1.0	J	TH
Thorium 232	TH-232	0.988	0.48	0.36	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	3.50	0.48	0.029	0.10		U_T
Uranium 233	U-233/234	1.08	0.30	0.16	1.0		U
Uranium 235	15117-96-1	0.151	0.10	0.19	1.0	U	U
Uranium 238	U-238	1.23	0.34	0.16	1.0		U
Neptunium 237	13994-20-2	0	0.11	0.16	1.0	U	NP
Plutonium 238	13981-16-3	-0.038	0.075	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.075	0.29	1.0	U	PU
Potassium 40	13966-00-2	16.8	0.66	0.21			GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	0.110	0.035	0.036	0.10		GAM
Radium 226	13982-63-3	0.479	0.054	0.051	0.10		GAM
Radium 228	15262-20-1	0.827	0.15	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.074	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.713	0.039	0.037			GAM
Thorium 232	TH-232	0.827	0.15	0.13			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.8		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	10/26/01

DATA SHEET, cont

SDG	7049	Client/Case no	Hanford	SDG H1449	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108042-04	Client sample id	B12C70		
Dept sample id	7049-004	Location/Matrix	B-38/200 E	SOLID	
Received	08/08/01	Collected/Weight	08/06/01 04:30	997.2 g	
% solids	96.9	Custody/SAF No	B01-058-147	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		0.12		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	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test AM Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	U	
B12C70	R108042-04			7049-004	U	
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	U
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 6994-166	2σ prep error 5.0 %							Reference Lab Notebook 6994 pg. 166								
B12C67	R108042-01			0.055	0.500			58		739			22	08/23/01	08/23	SS-031
B12C68	R108042-02			0.043	0.500			57		739			21	08/23/01	08/23	SS-032
B12C69	R108042-03			0.089	0.500			48		739			17	08/23/01	08/23	SS-034
B12C70	R108042-04			0.12	0.500			53		739			17	08/23/01	08/23	SS-041
BLK (QC ID=39455)	R108042-06			0.040	0.500			59		765				08/23/01	08/23	SS-043
LCS (QC ID=39454)	R108042-05			0.065	0.500			59		739				08/23/01	08/23	SS-042
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.057	0.500			50		765			17	08/23/01	08/23	SS-044
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 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test AM	Matrix SOLID
SDG 7049	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1449	

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	0.067	±	0.057
FOR 7 SAMPLES	YIELD	55	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test NP Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	U	
B12C70	R108042-04			7049-004	U	
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	U
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 6994-166	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 166											
B12C67	R108042-01			0.14	0.500			49		104			37	08/31/01	09/07	SS-047
B12C68	R108042-02			0.12	0.500			55		104			36	08/31/01	09/07	SS-048
B12C69	R108042-03			0.15	0.500			46		104			32	08/31/01	09/07	SS-049
B12C70	R108042-04			0.16	0.500			44		104			32	08/31/01	09/07	SS-050
BLK (QC ID=39455)	R108042-06			0.052	0.500			52		1058				08/31/01	09/10	SS-005
LCS (QC ID=39454)	R108042-05			0.67	0.500			34		105				08/31/01	09/07	SS-019
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.075	0.500			39		687			32	08/31/01	09/07	SS-033
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 0.20 ± 0.43
YIELD 46 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test PU Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-166								
B12C67	R108042-01			7049-001	U		U	
B12C68	R108042-02			7049-002	U		U	
B12C69	R108042-03			7049-003	U		U	
B12C70	R108042-04			7049-004	U		U	
BLK (QC ID=39455)	R108042-06			7049-006	U		U	
LCS (QC ID=39454)	R108042-05			7049-005	ok		ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	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 6994-166	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 166												
B12C67	R108042-01			0.22	0.500			80		100			23	08/24/01	08/24	SS-032
B12C68	R108042-02			0.30	0.500			60		100			22	08/24/01	08/24	SS-034
B12C69	R108042-03			0.49	0.500			45		100			18	08/24/01	08/24	SS-041
B12C70	R108042-04			0.29	0.500			62		100			18	08/24/01	08/24	SS-042
BLK (QC ID=39455)	R108042-06			0.28	0.500			60		100				08/24/01	08/24	SS-044
LCS (QC ID=39454)	R108042-05			0.31	0.500			58		100				08/24/01	08/24	SS-043
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.29	0.500			63		100			18	08/24/01	08/24	SS-047
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 0.31 ± 0.17
YIELD 61 ± 21

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test TH Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6994-166							
B12C67	R108042-01			7049-001	0.431	0.621 J	0.621 J
B12C68	R108042-02			7049-002	0.839	0.587 J	0.587 J
B12C69	R108042-03			7049-003	1.26	0.496 J	0.382 J
B12C70	R108042-04			7049-004	1.84	0.894 J	0.988 J
BLK (QC ID=39455)	R108042-06			7049-006	U	U	U
LCS (QC ID=39454)	R108042-05			7049-005		ok	
Duplicate (R108042-03)	R108042-07			7049-007	ok	ok J	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 6994-166 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 166																
B12C67	R108042-01			0.46	0.250			85		159			22	08/22/01	08/23	SS-022
B12C68	R108042-02			0.32	0.250			95		153			20	08/22/01	08/22	SS-019
B12C69	R108042-03			0.29	0.250			91		175			18	08/22/01	08/24	SS-019
B12C70	R108042-04			0.45	0.250			90		153			16	08/22/01	08/22	SS-022
BLK (QC ID=39455)	R108042-06			0.55	0.250			70		159				08/22/01	08/23	SS-021
LCS (QC ID=39454)	R108042-05			0.55	0.250			80		153				08/22/01	08/22	SS-024
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.37	0.250			97		175			18	08/22/01	08/24	SS-022
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 0.43 ± 0.21
YIELD 87 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test U Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

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 6994-166											
B12C67	R108042-01			7049-001	0.667 J	U	0.667 J	100	65	0	12
B12C68	R108042-02			7049-002	0.448 J	U	0.544 J	82	62	0	14
B12C69	R108042-03			7049-003	0.754 J	U	0.782 J	96	53	9	10
B12C70	R108042-04			7049-004	1.08	U	1.23	88	34	12	9
BLK (QC ID=39455)	R108042-06			7049-006	U	U	U				
LCS (QC ID=39454)	R108042-05			7049-005	ok	ok	ok				
Duplicate (R108042-03)	R108042-07			7049-007	ok J	- U	ok J	85	40	5	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-TW-1 & 2 - Soil Sampling							Averages	90		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 6994-166	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 166											
B12C67	R108042-01			0.31	0.500			89		105			36	08/31/01	09/06	SS-024
B12C68	R108042-02			0.30	0.500			93		104			35	08/31/01	09/06	SS-021
B12C69	R108042-03			0.27	0.500			106		104			31	08/31/01	09/06	SS-022
B12C70	R108042-04			0.19	0.500			100		115			37	08/31/01	09/12	SS-041
BLK (QC ID=39455)	R108042-06			0.047	0.500			84		947				08/31/01	09/12	SS-047
LCS (QC ID=39454)	R108042-05			0.86	0.500			100		115				08/31/01	09/12	SS-042
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.19	0.500			98		112			36	08/31/01	09/11	SS-046
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 0.31 ± 0.52
YIELD 96 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test SR Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	U	
B12C70	R108042-04			7049-004	U	
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	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 6994-166	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 166															
B12C67	R108042-01			0.23	1.00			91		100			20	08/21/01	08/21	GRB-231
B12C68	R108042-02			0.24	1.00			95		100			19	08/21/01	08/21	GRB-202
B12C69	R108042-03			0.23	1.00			93		100			15	08/21/01	08/21	GRB-203
B12C70	R108042-04			0.22	1.00			91		100			15	08/21/01	08/21	GRB-232
BLK (QC ID=39455)	R108042-06			0.30	1.00			77		100				08/21/01	08/21	GRB-206
LCS (QC ID=39454)	R108042-05			0.25	1.00			78		100				08/21/01	08/21	GRB-230
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.25	1.00			92		100			15	08/21/01	08/21	GRB-207
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 0.25 ± 0.053
YIELD 88 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test TC Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	1.90	J
B12C70	R108042-04			7049-004	1.93	J
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	ok	J
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 6994-166	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 166															
B12C67	R108042-01			0.60	1.03			93		50			48	09/13/01	09/18	GRB-229
B12C68	R108042-02			0.55	1.04			91		50			47	09/13/01	09/18	GRB-230
B12C69	R108042-03			0.36	1.01			96		100			46	09/13/01	09/21	GRB-218
B12C70	R108042-04			0.39	1.01			91		100			49	09/13/01	09/24	GRB-205
BLK (QC ID=39455)	R108042-06			0.34	1.00			106		100				09/13/01	09/25	GRB-203
LCS (QC ID=39454)	R108042-05			0.41	1.00			99		84				09/13/01	09/18	GRB-221
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.38	1.01			91		100			50	09/13/01	09/25	GRB-218
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test	TC
Matrix	SOLID
SDG	7049
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1449

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	0.43	±	0.20
YIELD	95	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test GAM Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 6994-166							
B12C67	R108042-01			7049-001	U		1.82
B12C68	R108042-02			7049-002	U		U
B12C69	R108042-03			7049-003	0.056		0.102
B12C70	R108042-04			7049-004	U		0.110
BLK (QC ID=39455)	R108042-06			7049-006	U		U
LCS (QC ID=39454)	R108042-05			7049-005	ok		ok
Duplicate (R108042-03)	R108042-07			7049-007	ok	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 6994-166 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 166																
B12C67	R108042-01			0.18	575					116			30	08/24/01	08/31	02,01,00
B12C68	R108042-02			0.089	597					116			29	08/24/01	08/31	MB,07,00
B12C69	R108042-03			0.080	777					114			35	08/24/01	09/10	02,04,00
B12C70	R108042-04			0.081	755					114			25	08/24/01	08/31	02,04,00
BLK (QC ID=39455)	R108042-06			0.068	575					113				08/24/01	08/31	01,03,00
LCS (QC ID=39454)	R108042-05			0.033	575					114				08/24/01	08/31	MB,05,00
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.11	777					134			79	08/24/01	10/24	MB,05,00
Nominal values and limits from method				0.050	575					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 0.092 ± 0.091
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test U T Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/g)
Preparation batch 6994-166					
B12C67	R108042-01			7049-001	1.60
B12C68	R108042-02			7049-002	1.69
B12C69	R108042-03			7049-003	2.90
B12C70	R108042-04			7049-004	3.50
BLK (QC ID=39455)	R108042-06			7049-006	U
LCS (QC ID=39454)	R108042-05			7049-005	ok
Duplicate (R108042-03)	R108042-07			7049-007	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 6994-166	2σ prep error 9.0 %				Reference Lab Notebook 6994 pg. 166											
B12C67	R108042-01			0.029	0.100								37	09/07/01	09/07	KPA-001
B12C68	R108042-02			0.029	0.100								36	09/07/01	09/07	KPA-001
B12C69	R108042-03			0.029	0.100								32	09/07/01	09/07	KPA-001
B12C70	R108042-04			0.029	0.100								32	09/07/01	09/07	KPA-001
BLK (QC ID=39455)	R108042-06			0.003	0.100									09/07/01	09/07	KPA-001
LCS (QC ID=39454)	R108042-05			0.029	0.100									09/07/01	09/07	KPA-001
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.029	0.100								32	09/07/01	09/07	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 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test U T Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1449

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 FOR 7 SAMPLES
MDA 0.025 ± 0.020
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test C Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	U	
B12C70	R108042-04			7049-004	U	
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	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 6994-166	2σ prep error 10.0 %				Reference Lab Notebook 6994 pg. 166											
B12C67	R108042-01			4.6	0.202			100		100			42	09/11/01	09/12	LSC-007
B12C68	R108042-02			4.2	0.217			100		100			41	09/11/01	09/12	LSC-007
B12C69	R108042-03			4.4	0.205			100		100			37	09/11/01	09/12	LSC-007
B12C70	R108042-04			4.1	0.230			100		100			37	09/11/01	09/12	LSC-007
BLK (QC ID=39455)	R108042-06			4.7	0.200			100		100				09/11/01	09/12	LSC-007
LCS (QC ID=39454)	R108042-05			12	0.200			100		12				09/11/01	09/12	LSC-007
Duplicate (R108042-03) (QC ID=39456)	R108042-07			4.5	0.205			100		100			37	09/11/01	09/12	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 5.5 ± 5.7
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test H Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	28.7	J
B12C70	R108042-04			7049-004	29.0	J
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	J
Duplicate (R108042-03)	R108042-07			7049-007	ok	J
Spike (R108042-03)	R108042-08			7049-008	ok	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 6994-166 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 166																
B12C67	R108042-01			0.097	21.2			97		120			27	08/24/01	08/28	LSC-004
B12C68	R108042-02			0.11	21.0			91		120			26	08/24/01	08/28	LSC-004
B12C69	R108042-03			0.10	21.4			96		120			22	08/24/01	08/28	LSC-004
B12C70	R108042-04			0.11	20.5			97		120			22	08/24/01	08/28	LSC-004
BLK (QC ID=39455)	R108042-06			0.30	20.0			33		120				08/24/01	08/28	LSC-004
LCS (QC ID=39454)	R108042-05			0.36	20.0			33		120				08/24/01	08/28	LSC-004
Duplicate (R108042-03) (QC ID=39456)	R108042-07			0.093	22.2			96		120			22	08/24/01	08/28	LSC-004
Spike (R108042-03) (QC ID=39457)	R108042-08			0.15	21.6			98		54			22	08/24/01	08/28	LSC-004
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 10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test H	Matrix SOLID
SDG 7049	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1449	

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	0.16	±	0.21
FOR 8 SAMPLES	YIELD	80	±	58

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1449

Test NI_L Matrix SOLID
SDG 7049
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1449

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6994-166						
B12C67	R108042-01			7049-001	U	
B12C68	R108042-02			7049-002	U	
B12C69	R108042-03			7049-003	U	
B12C70	R108042-04			7049-004	U	
BLK (QC ID=39455)	R108042-06			7049-006	U	
LCS (QC ID=39454)	R108042-05			7049-005	ok	
Duplicate (R108042-03)	R108042-07			7049-007	-	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 6994-166	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 166															
B12C67	R108042-01			1.9	0.500			92		100			26	08/25/01	08/27	LSC-007
B12C68	R108042-02			1.9	0.500			91		100			25	08/25/01	08/27	LSC-007
B12C69	R108042-03			1.9	0.500			91		100			21	08/25/01	08/27	LSC-007
B12C70	R108042-04			1.9	0.500			90		100			21	08/25/01	08/27	LSC-007
BLK (QC ID=39455)	R108042-06			1.8	0.500			96		100				08/25/01	08/27	LSC-007
LCS (QC ID=39454)	R108042-05			1.8	0.500			95		100				08/25/01	08/27	LSC-007
Duplicate (R108042-03) (QC ID=39456)	R108042-07			1.9	0.500			89		100			22	08/25/01	08/28	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 1.9 ± 0.098
YIELD 92 ± 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/26/01

SDG 7049
Contact Melissa C. Mannion

R E P O R T G U I D E

Client Hanford
Contract No. 630
Case no SDG H1449

S A M P L E S U M M A R Y

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/26/01

SDG 7049
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1449

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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D A T A S H E E T

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

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

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

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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R E P O R T G U I D E

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M E T H O D S U M M A R Y

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Protocol Hanford
Version Ver 1.0
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Version 3.06
Report date 10/26/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-144	Page 1 of 1

Collector: Thomas G./Watson D. /Nielson	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-38/200 E H1449 (7049)	SAF No.: B01-058	
Ice Chest No.: Sm1-137 3of3	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/BORA~~ Eberline	Offsite Property No.: A010354	Bill of Lading/Air Bill No.: 4235 7954 — 6299	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological <.5mR Field Instruments background
Mercury Vapor 0.598 ppm
Special Handling and/or Storage

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) DSA 7/18/01	See item (3) in Special Instructions.	See item (4) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B12C67	SOIL	08/01/01	0245						X		B12BT4

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	08/01/01 0545	Ref 1B	8/01/01 0545
Ref 1B	8.7.01 0900	R Thorey / R Thorey	8.7.01 0900
R Thorey	8.7.01 0900	F-ED Eep	8-7-01
Jack Ex.	8.8.01 10:15	JR Porter & R Corse	8-8-01 10:15

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

DSA 7/18/01

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/1/01.
Collector not available to relenquish samples on 8/7/01 for shipment. RT 8/7/01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-145	Page 1 of 1

Collector: Thomas G./Watson D. / Nielson	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631 H1449 (7049)	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E Depth 9.5'-12.0'	SAF No.: B01-058	
Ice Chest No.: SML-137 (3063 1073) RT 8.7.01	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA/REGRA~~ DSA 7/18/01 Eberline	Offsite Property No.: A010354		Bill of Lading/Air Bill No.: 4235795 4 -6299

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological Field Instrument - background

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 8/2/01. Collector not available to relenquish samples on 8/17/01 for shipment. RT 8.7.01

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	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL) RJN 7/21/01	See item (3) in Special Instructions.	See item (4) in Special Instructions.			TPH TO
Sample No.	Matrix *	Sample Date	Sample Time							
B12C68	SOIL	8/2/01	0110					X		B12B75

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas	8/2/01 0855	Received By/Stored In: Ref 1C	8/2/01 0855
Relinquished By/Removed From: Ref 1C	8.7.01 0900	Received By/Stored In: R Thorne	8.7.01 0900
Relinquished By/Removed From: R Thorne	8.7.01 0900	Received By/Stored In: FED EX	8-7-01
Relinquished By/Removed From: Fed Ex	8-8-01 10:15	Received By/Stored In: JR Carson	8-8-01 10:15
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) (Calmium, 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

DSA 7/18/01

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)

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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-38/200 E H1449 (7049)	SAF No.: B01-058	
Ice Chest No.: SM 137	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: 7/18/01 DSA ~~TMA/RECRA~~ Eberline	Offsite Property No.: A010354	Bill of Lading/Air Bill No.: 4235 7954 – 6299	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment. RT 8/7/01

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									
✓ B12C69	SOIL	8/6/01	0430							X		B12B61

DSA 7/18/01 TIETO

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	8/6/01 0615	Rcf 1A	8/6/01 0615
R. Rf 1A	8.7.01 0900	R. Thorsby	8.7.01 0900
R. Thorsby	8.7.01 0900	RT 8.7.01	FEDEX
Fed Ex	8-8-01 10:15	[illegible]	8-8-01 10:15

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

DSA 7/18/01

Matrix *: S=Soil, SB=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	B01-058-147	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-38/200 E H1449 (7049)	SAF No.: B01-058	
Ice Chest No.: Sm1 137 (3of3)	Field Logbook No.: EL-1518 - 1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSA 7/18/01 ~~TMA/RECRA~~ Eberline	Offsite Property No.: A016354	Bill of Lading/Air Bill No.: 42357954 6299	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 8/6/01. Collector not available to relenquish samples on 8/7/01 for shipment. RT 8/7/01

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 (3) in Special Instructions.	VOA - 8260A (TCL) DSA 7/18/01	See item (3) in Special Instructions.	See item (4) in Special Instructions.			TICTO
Sample No.	Matrix *	Sample Date	Sample Time							
B12C70	SOIL	8/6/01	0430					X		B12B V1

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Greg Thomas	0615 8/6/01	Ref 1A	0615 8/6/01
R Of 1A 3728	0900 8.7.01	R Thore	0900 8.7.01
R Thore	0900 8.7.01	FED EX	8-7-01
Fed Ex	8-8-01 10:15	JR Corso	10:15 8-8-01

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

DSA 7/18/01

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 8-8-01 10:15

CoC No. B01-058-144, B01-058-145, B01-058-146 + B01-058-147

Container I.D. No. SML-137 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: 4
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 8-8-01
14. Received by [signature] Date: 8-8-01 Time: 10:15

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____