N1103

0055045

Date: 4 January 2001
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-NR-1 TSD Sites Remedial Action Sampling - Soil (Waste Site 120-N-2 Pond)
Subject: Wet Chemistry - Data Package No. H1103-RLN (SDG No. H1103)

RECEIVED
JUN 11 2001
EDMC

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1103-RLN prepared by RECRA LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B10KX7	10/17/00	Soil	C	See note 1
B10KX8	10/17/00	Soil	C	See note 1
B10KX9	10/17/00	Soil	C	See note 1
B10KY0	10/17/00	Soil	C	See note 1

1 - IC anions by 300.0 (nitrate, nitrite and sulfate); pH by 9045C; nitrate/nitrite by 353.2; and chromium VI by 7196A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

  Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Two days for nitrate and nitrite; 28 days for sulfate, chromium VI and nitrate/nitrite, and immediate for pH.

Due to the holding time being exceeded by greater than twice the limit, all undetected nitrate and nitrite results were rejected and flagged "UR" and all undetected results were qualified as estimates and flagged "J".

Due to the holding time being exceeded by greater than twice the limit, all pH results were qualified as estimates and flagged "J".

All other holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field Blank

One field blank (B10KX9) was submitted for analysis. All field blank results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify

sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples were submitted for analysis (B10KX7/B10KX8). All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area Remedial Action Sampling and Analysis Plan TDLs to ensure that laboratory detection levels meet the required criteria. All reported nitrite results were above the TDL and the TDL for nitrate was exceeded in sample B10KX9. Under the BHI statement of work, no qualification was required. All other reported detection limits met the analyte specific TDL.

- **Completeness**

Data package No. H1103-RLN (SDG No. H1103) was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 79%.

MAJOR DEFICIENCIES

Due to the holding time being exceeded by greater than twice the limit, all undetected nitrate and nitrite results were rejected and flagged "UR". Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

Due to the holding time being exceeded by greater than twice the limit, all undetected nitrate and nitrite results were qualified as estimates and flagged "J".Due to the holding time being exceeded by greater than twice the limit, all pH results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All reported nitrite results were above the TDL and the TDL for nitrate was exceeded in sample B10KX9. Under the BHI statement of work, no qualification was required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 2, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1103	REVIEWER: TLI	DATE: 01/04/01	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate Nitrite	J/UR	All	Holding time exceeded
pH	J	All	Holding time exceeded

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

GENERAL CHEMISTRY ANALYSIS, SOIL MATRIX, (MG/KG)

Project: BECHTEL-HANFORD																							
Laboratory: Recra LabNet																							
Case	SDG: H1103																						
Sample Number		B10KX7		B10KX8		B10KX9		B10KY0															
Remarks				Duplicate		E. Blank																	
Sample Date		10/17/00		10/17/00		10/17/00		10/17/00															
General Chemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Nitrite	1	1.3	UR	1.3	UR	1.3	UR	1.3	UR														
Nitrate	1	25	J	28	J	1.3	UR	15	J														
Chromium VI	0.5	0.41	U	0.41	U	0.40	U	0.41	U														
Sulfate		6.6		7.2		1.3	U	43.8															
Nitrate/Nitrite		5.2		6.2		0.20	U	3.8															
pH*		9.0	J	8.9	J	7.5	J	8.6	J														

* Units are pH units

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

010

Hanford Laboratory - Idaho

INORGANICS DATA SUMMARY REPORT 11/29/00

CLIENT: THOMASSED B00-054 H1102 RECEIVED LOT #: 0010LP94

WORK ORDER: 18985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10KX7	% Solids	97.9		%	0.01	1.0
		Nitrite by IC	1.3	uR	MG/KG	1.3	1.0
		Nitrate by IC	15	J	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	6.4		MG/KG	1.3	1.0
		Nitrate Nitrite	6.2		MG/KG	0.19	1.0
		pH	9.0	J	SOIL PH	0.01	1.0
-002	B10KX8	% Solids	98.0		%	0.01	1.0
		Nitrite by IC	1.3	uR	MG/KG	1.3	1.0
		Nitrate by IC	28	J	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	7.2		MG/KG	1.3	1.0
		Nitrate Nitrite	6.2		MG/KG	0.20	1.0
		pH	8.9	J	SOIL PH	0.01	1.0
-003	B10KX9	% Solids	98.9		%	0.01	1.0
		Nitrite by IC	1.3	uR	MG/KG	1.3	1.0
		Nitrate by IC	1.3	uR	MG/KG	1.3	1.0
		Chromium VI	0.40	u	MG/KG	0.40	1.0
		Sulfate by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		pH	7.8	J	SOIL PH	0.01	1.0
-004	B10KY0	% Solids	96.7		%	0.01	1.0
		Nitrite by IC	1.3	uR	MG/KG	1.3	1.0
		Nitrate by IC	15	J	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	49.8		MG/KG	1.3	1.0
		Nitrate Nitrite	3.8		MG/KG	0.20	1.0
		pH	8.6	J	SOIL PH	0.01	1.0

1/4/01

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-054 H1103
RFW# : 0010L994

W.O. # : 10985-001-001-9999-00
Date Received: 10-20-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blanks were within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-3-00
Date

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 11 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-054-059	Page 1 of 1
Collector: Kalamalian	Company Contact: R Kashow; Telephone No.: 372-2187	Project Coordinator: TRENT, SJ	Price Code: 8K; Data Turnaround: 15 days; Air Quality ☐
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Soil	Sampling Location: 100N-NR-1	SAF No.: B00-054	
Ice Chest No.: 3M1-463 (1 of 1)	Field Logbook No.: EL-1524; COA: R120022400	Method of Shipment: FED EX	
Shipped To: HANFORD	Offsite Property No.: A010008	Bill of Lading/Air Bill No.: 4235795 3 9860	

RK 10/18/00

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE Samples originated in non Rad controlled area. <2000 pCi/g. NO TA Required.

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C, Other pH (Soil)
Type of Container	G	G
No. of Containers(s)	1	1
Volume	250mL	250mL

SAMPLE ANALYSIS

Sample No.	Matrix*	Sample Date	Sample Time	Cool 4C	Cool 4C, Other pH (Soil)
B10K07	SOIL	10/17/00	0929	X	X
B10K08	SOIL	10/17/00	0929	X	X
B10K09	SOIL	10/17/00	0929	X	X
B10KY9	SOIL	10/17/00	0945	X	X

Samples stored in Ref.# 28 at the 3728 Shipping Facility on 10/19/00. Collector not available to relinquish samples on 10/19/00 for shipment. RT 10/19/00

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
DALSLER	10/19/00 1500	Fritz 20	10/19/00 1500
R.J. Thorer	10/19/00 0900	R.J. Thorer	10/19/00 0900
R.J. Thorer	10/19/00 0900	Fedex	
Fedex	10/20/00 0920	T Bryant	10/20/00 0920

SPECIAL INSTRUCTIONS

Lab COA: R120022400, pH ASAP, Samples originated outside of a radiologically controlled area, a TA is not required.

(1) ICP Metals - 6010A (TAL) (Antimony, Barium, Beryllium, Cadmium, Chromium, Copper, Manganese, Nickel, Silver, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Thallium); Mercury - 7471 - (CV)

(2) IC Anions - 300.0 (Nitrate, Nitrite, Sulfate); HCO3/CO3 - 310.1; Cyanide Rec - 7196

+ ADD - pH (Soil) - 9045

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

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

9510-05-011 (10/00)

DEC 14 '00 09:59AM BHI_SSD MANAGEMENT 372 9487 P.11/11

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 100-NR-1		DATA PACKAGE: H1103
VALIDATOR: JLI	LAB: RECRA	DATE: 12/27/00
CASE:		SDG: H1103

ANALYSES PERFORMED

☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☒ Chromium-VI	☒ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX
B10KX7 B10KX8 B10KX9 B10KY0
Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No (N/A)

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . ~~Yes~~ (No) N/A

Comments:

Nitrate + Nitrite – greater than 2X J/UR
plt one J all

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A
Are initial calibration results acceptable? . . . . . Yes No N/A
Was a calibration check performed for all applicable analyses? Yes No N/A
Are calibration check results acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A
Are laboratory blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments:

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A
Are spike recoveries acceptable? . . . . . Yes No N/A
Were LCS analyses performed at the required frequency? . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments:

6. PRECISION

Were laboratory duplicate samples analyzed
at the required frequency? . . . . . Yes No N/A
Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No N/A
Are field split RPD values acceptable? . . . . . Yes No N/A

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments:

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments: all nitrate on
nitrite ~~X~~ on

Appendix 6

Additional Documentation Requested by Client

Ecova Lab Net - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/29/00

CLIENT: THERMAFUSE 300-064 E1103
WORK ORDER: 10968-001-001-9999-00

ECOVA LOT #: 0010L994

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LCC070-MB1	Nitrite by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LCC071-MB1	Nitrite by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LBC070-MB1	Nitrate by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LBC071-MB1	Nitrate by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LVI063-MB1	Chromium VI	0.40	U	MG/KG	0.40	1.0
BLANK10	00LIC270-MB1	Sulfate by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LIC271-MB1	Sulfate by IC	1.2	U	MG/KG	1.2	1.0
BLANK10	00LF3054-MB1	Nitrate Nitrite	0.20	U	MG/KG	0.20	1.0

Severn Labs - Livermore

INORGANICS ACCURACY REPORT 11/29/00

CLIENT: THOMPSOND DOE-054 R1103 RECEIVED LOT #: 0010LD94
WORK ORDER: 10005-001-001-0000-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10KK7	Nitrite by IC	83	1.3 u	81	104.1	2.0
		Nitrate by IC	84	28	81	114.5	2.0
		Sulfate by IC	60.0	6.6	51.0	104.8	2.0
		Nitrate Nitrite	11.4	6.2	5.1	101.6	2.0
-004	B10CF0	Soluble Chromium VI	4.8	0.41u	4.1	106.5	1.0
		Insoluble Chromium VI	1310	0.41u	1130	115.9	100
BLANK10	00LCC070-MB1	Nitrite by IC	25	1.2 u	25	101.5	1.0
BLANK10	00LCC071-MB1	Nitrite by IC	25	1.2 u	25	100.4	1.0
BLANK10	00LBC070-MB1	Nitrate by IC	25	1.2 u	25	99.3	1.0
BLANK10	00LBC071-MB1	Nitrate by IC	24	1.2 u	25	97.2	1.0
BLANK10	00LVI083-MB1	Soluble Chromium VI	4.3	0.40u	4.0	107.6	1.0
		Insoluble Chromium VI	1190	0.40U	1100	102.4	100
BLANK10	00LIC070-MB1	Sulfate by IC	24.2	1.2 u	25.0	97.0	1.0
BLANK10	00LIC071-MB1	Sulfate by IC	24.0	1.2 u	25.0	95.8	1.0
BLANK10	00LP3054-MB1	Nitrate Nitrite	5.2	0.20u	5.0	105.6	1.0

Reeze Laboratory - Lionville

INORGANICS PRECISION REPORT 11/29/00

CLIENT: TMCHANFORD B00-084 W1103 RECRA LOT #: 00101L994
WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10XX7	% Solids	97.9	97.9	0.00	1.0
		Nitrite by IC	1.3 u	1.3 U	NC	1.0
		Nitrate by IC	25	25	0.44	1.0
		Sulfate by IC	6.6	6.6	0.53	1.0
		Nitrate Nitrite	6.2	6.1	2.6	1.0
		pH	9.0	9.0	0.7	1.0
-004REP	B10XY0	Chromium VI	0.41u	0.41u	NC	1.0

Date: 4 January 2001
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-NR-1 TSD Sites Remedial Action Sampling - Soil (Waste Site 120-N-2 Pond)
Subject: Inorganics - Data Package No. H1103-RLN (SDG No. H1103)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H1103-RLN prepared by RECRA LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B10KX7	10/17/00	Soil	C	See note 1
B10KX8	10/17/00	Soil	C	See note 1
B10KX9	10/17/00	Soil	C	See note 1
B10KY0	10/17/00	Soil	C	See note 1

1 - ICP metals by 6010B; mercury by7471A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 6 provide the following information as indicated below:

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DATA QUALITY PARAMETERS

- **Holding Times**

  Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

  All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field Blank

One field blank (B10KX9) was submitted for analysis. Barium, beryllium, manganese and zinc were detected in the field blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike

Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery of 67.5%, all anitmony results were qualified as estimates and flagged "UJ".

All other matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples were submitted for analysis (B10KX7/B10KX8). All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area Remedial Action Sampling and Analysis Plan TDLs to ensure that laboratory detection levels meet the required criteria. Lead was over the TDL in sample B10KX9 and selenium in samples B10KX8 and B10KY0. Under the BHI statement of work, no qualification is required. All other reported detection limits met the analyte specific TDL.

- **Completeness**

Data package No. H1103-RLN (SDG No. H1103) was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery of 67.5%, all anitmony results were qualified as estimates and flagged "UJ". Data flagged "J" is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Lead was over the TDL in sample B10KX9 and selenium in samples B10KX8 and B10KY0. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 2, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H1103	REVIEWER: TLI	DATE: 01/04/01	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	UJ	All	MS recovery

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD																			
Laboratory: RECRA LabNet																			
Case	SDG: H1103																		
Sample Number		B10KX7		B10KX8		B10KX9		B10KY0											
Remarks				Duplicate		E. Blank													
Sample Date		10/17/00		10/17/00		10/17/00		10/17/00											
Inorganics	TDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	10	0.25	U	0.26	U	0.25	U	0.26	U										
Arsenic	51.05	2.8	U	2.9	U	2.8	U	2.9	U										
Barium		63.5		69.0		1.2		81.9											
Beryllium		0.29	U	0.31		0.02		0.32											
Cadmium		0.47	U	0.47	U	0.46	U	0.53											
Chromium	0.5	7.8		8.3		0.33	U	9.9											
Copper		15.1		16.0		0.28	U	16.2											
Mercury	0.05	0.02		0.02		0.01	U	0.04											
Manganese		331		342		3.6		376											
Nickel		10.1		9.8		1.3	U	12.5											
Lead	2	3.6		4.7		2.1	U	4.3											
Antimony		2.6	UJ	2.6	UJ	2.6	UJ	2.7	UJ										
Selenium	5	5.0	U	5.1	U	4.9	U	5.1	U										
Thallium		5.1	U	5.1	U	5.0	U	5.2	U										
Vanadium		50.9		55.5		0.36	U	58.3											
Zinc		41.4		44.6		1.1		50.9											

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

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Roche Labnet - Lionville

INORGANICS DATA SUMMARY REPORT 11/14/00

CLIENT: THOMPSONS BOS-084 H1103 ANCHA LOT #: 0010L084

WORK ORDER: 10988-001-001-0000-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	H10KX7	Silver, Total	0.25	u	MG/KG	0.25	1.0
		Arsenic, Total	2.8	u	MG/KG	2.8	1.0
		Barium, Total	63.8		MG/KG	0.24	1.0
		Beryllium, Total	0.29		MG/KG	0.01	1.0
		Cadmium, Total	0.47	u	MG/KG	0.47	1.0
		Chromium, Total	7.8		MG/KG	0.34	1.0
		Copper, Total	15.1		MG/KG	0.26	1.0
		Mercury, Total	0.02		MG/KG	0.02	1.0
		Manganese, Total	331		MG/KG	0.12	1.0
		Nickel, Total	10.1		MG/KG	1.4	1.0
		Lead, Total	3.6		MG/KG	2.2	1.0
		Antimony, Total	2.6	uJ	MG/KG	2.6	1.0
		Selenium, Total	5.0	u	MG/KG	5.0	1.0
		Thallium, Total	5.1	u	MG/KG	5.1	1.0
		Vanadium, Total	20.9		MG/KG	0.27	1.0
		Zinc, Total	41.4		MG/KG	0.23	1.0

R 11/4/01

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/14/00

CLIENT: THERMAFORD B00-034 N1103 RECRA LOT #: 0010L094

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10KX8	Silver, Total	0.26	U	MG/KG	0.26	1.0
		Arsenic, Total	2.9	U	MG/KG	2.9	1.0
		Barium, Total	69.0		MG/KG	0.22	1.0
		Beryllium, Total	0.31		MG/KG	0.01	1.0
		Cadmium, Total	0.47	U	MG/KG	0.47	1.0
		Chromium, Total	0.3		MG/KG	0.24	1.0
		Copper, Total	16.0		MG/KG	0.28	1.0
		Mercury, Total	0.02		MG/KG	0.02	1.0
		Manganese, Total	242		MG/KG	0.12	1.0
		Nickel, Total	3.8		MG/KG	1.4	1.0
		Lead, Total	4.7		MG/KG	3.2	1.0
		Antimony, Total	2.6	U	MG/KG	2.6	1.0
		Selenium, Total	5.1	U	MG/KG	5.1	1.0
		Thallium, Total	5.1	U	MG/KG	5.1	1.0
		Vanadium, Total	25.5		MG/KG	0.37	1.0
		Zinc, Total	44.6		MG/KG	0.24	1.0

1/4/01

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Macro LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/14/00

CLIENT: THERMAFORD E00-054 N1103 RECEIVED LOT #: 0010L994
WORK ORDER: 10965-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	S10KX9	Silver, Total	0.25	u	MG/KG	0.25	1.0
		Arsenic, Total	2.8	u	MG/KG	2.8	1.0
		Barium, Total	1.2		MG/KG	0.24	1.0
		Beryllium, Total	0.02		MG/KG	0.01	1.0
		Cadmium, Total	0.46	u	MG/KG	0.46	1.0
		Chromium, Total	0.33	u	MG/KG	0.33	1.0
		Copper, Total	0.28	u	MG/KG	0.28	1.0
		Mercury, Total	0.01	u	MG/KG	0.01	1.0
		Manganese, Total	3.5		MG/KG	0.11	1.0
		Nickel, Total	1.3	u	MG/KG	1.3	1.0
		Lead, Total	2.1	u	MG/KG	2.1	1.0
		Antimony, Total	2.6	u J	MG/KG	2.6	1.0
		Selenium, Total	4.9	u	MG/KG	4.9	1.0
		Thallium, Total	5.0	u	MG/KG	5.0	1.0
		Vanadium, Total	0.36	u	MG/KG	0.36	1.0
		Zinc, Total	1.1		MG/KG	0.23	1.0

1/4/01

Hanford LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/14/00

CLIENT: THORNBURG 800-064 H1103 NBCHA LOT #: 0010L994

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B10KY0	Silver, Total	0.26	u	MG/KG	0.26	1.0
		Arsenic, Total	2.9	u	MG/KG	2.9	1.0
		Barium, Total	81.9		MG/KG	0.15	1.0
		Beryllium, Total	0.22		MG/KG	0.01	1.0
		Cadmium, Total	0.53		MG/KG	0.48	1.0
		Chromium, Total	8.9		MG/KG	0.25	1.0
		Copper, Total	16.3		MG/KG	0.29	1.0
		Mercury, Total	0.04		MG/KG	0.03	1.0
		Manganese, Total	376		MG/KG	0.12	1.0
		Nickel, Total	12.5		MG/KG	1.4	1.0
		Lead, Total	4.3		MG/KG	2.2	1.0
		Antimony, Total	2.7	u J	MG/KG	2.7	1.0
		Selenium, Total	5.1	u	MG/KG	5.1	1.0
		Thallium, Total	5.2	u	MG/KG	5.2	1.0
		Vanadium, Total	58.3		MG/KG	0.30	1.0
		Zinc, Total	86.9		MG/KG	0.24	1.0

1/4/01

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-054
RFW#: 0010L994
SDG/SAF#: H1103/B00-054

W.O.#: 10985-001-001-9999-00
Date Received: 10-20-00

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 (80-120% for Mercury).

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 form 7.

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

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 18 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B10KX7	Antimony	500	95.3

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

13. 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.

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory
gmb/m10-994

12-6-00
Date

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-054-059	Page 1 of 1
Collector - Kerkow/Shea	Company Contact: R Kerkow — Telephone No.: 373-2187	Project Coordinator: TRENT, SJ	Price Code: 8K — Data Turnaround: 15 days
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Soil	Sampling Location: 100N-NR-1	SAF No.: B00-054	Air Quality ☐
Ice Chest No.: 3M1-463 (1 of 1)	Field Logbook No.: EL-1524 — COA: RI20N12600	Method of Shipment: FED EX	
Shipped To: INMARECRA	Offite Property No.: A010008	Bill of Lading/Air Bill No.: 4235795 3986D	

RK 10/17/00

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE Samples originated in Non Rad Controlled area. <2000 pCi/g. NO TA Required.

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C									
Type of Container	G	G									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	See Item (1) in Special Instructions	See Item (2) in Special Instructions. 4 ADD pH(Soil)									

Sample No.	Matrix *	Sample Date	Sample Time										
B10KX7	SOIL	10/17/00	0929	X	X								
B10KX8	SOIL	10/17/00	0929	X	X								
B10KX9	SOIL	10/17/00	0929	X	X								
B10KY0	SOIL	10/17/00	0945	X	X								

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/17/00. Collector not available to relinquish samples on 10/19/00 for shipment. RT 10/19/00

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	10/17/00 1500	Fritz 2B	10/17/00 1500
RT Rem [illegible]	10/19/00 0900	RT Rthoren	10/19/00 0900
RT Rthoren	10/19/00	[illegible]	
Fedex	10/20/00 0920	[illegible]	10/20/00 0920

SPECIAL INSTRUCTIONS

Lab COA: RI20N12600, pH ASAP, Samples originated outside of radiologically controlled area, a TA is not required.

(1) ICP Metals - 6010A (TAL) [Antimony, Barium, Beryllium, Cadmium, Chromium, Copper, Manganese, Nickel, Silver, Vanadium, Zinc]; ICP Metals - 6010A (Add-on) [Arsenic, Lead, Selenium, Thallium]; Mercury - 7471 - (CV)

(2) IC Anions - 300.0 [Nitrate, Nitrite, Sulfate]; NO2/NO3 - 353.1; Chromium Hex - 7196

4 ADD - pH(Soil) - 9045

Matrix *: S-Soil; SD-Sediment; SO-Solid; L-Liquid; W-Water; G-Gas; A-Air; SS-Stem Solid; SL-Stem Liquid; T-Tissue; WI-Wipe; LI-Liquid; Se-Sediment; O-Other

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

BH-EE-011 (10/00)

000028

Received: 14-DEC-00 11:30 AM From: BHI SOLID MANAGEMENT 509 372 9487 DEC 14 '00 09:55AM P.18/18

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-NR-1			DATA PACKAGE: H1103		
VALIDATOR: TLI		LAB: Recra		DATE: 12/27/00	
CASE:			SDG: H1103		
ANALYSES PERFORMED					
☐ CLP/ICP	☐ CLP/GFAA	☐ CLP/Hg	☐ CLP/Cyanide	☐	☐
☒ SW-846/ICP	☐ SW-846/GFAA	☒ SW-846/Hg	☐ SW-846 Cyanide	☐	☐
SAMPLES/MATRIX					
B10KX7	B10KX8	B10KX9	~~B1K~~	B10K40	
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No (N/A)

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Barium, Beryllium, Manganese + zinc — in FB

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: Antimony — 67.5 % UJ all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A
Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A
Were ICP serial dilution samples analyzed? . . . . . Yes No N/A
Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No N/A
Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A
Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A
Were analytical spikes performed as required? . . . . . Yes No N/A
Are analytical spike recoveries acceptable? . . . . . Yes No N/A
Was MSA performed as required? . . . . . Yes No N/A
Are MSA results acceptable? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A
Are all results supported in the raw data? . . . . . Yes No N/A
Are results calculated properly? . . . . . Yes No N/A
Do results meet the CRDLs? . . . . . Yes No N/A

Comments: ~~Silver, Arsenic all out~~
pb - Kxq over
Selenium - K8 + K0 over

Appendix 6

Additional Documentation Requested by Client

Roers LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/14/00

CLIENT: THORNBURG 800-054 K1101 RECRA LOT #: 0010L994

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1692-MB1	Silver, Total	0.26	U	MG/KG	0.26	1.0
		Arsenic, Total	2.9	U	MG/KG	2.9	1.0
		Barium, Total	0.25	U	MG/KG	0.25	1.0
		Beryllium, Total	0.01	U	MG/KG	0.01	1.0
		Cadmium, Total	0.48	U	MG/KG	0.48	1.0
		Chromium, Total	0.35	U	MG/KG	0.35	1.0
		Copper, Total	0.29	U	MG/KG	0.29	1.0
		Manganese, Total	0.12	U	MG/KG	0.12	1.0
		Nickel, Total	1.4	U	MG/KG	1.4	1.0
		Lead, Total	2.2	U	MG/KG	2.2	1.0
		Antimony, Total	2.7	U	MG/KG	2.7	1.0
		Selenium, Total	5.2	U	MG/KG	5.2	1.0
		Thallium, Total	5.2	U	MG/KG	5.2	1.0
		Vanadium, Total	0.38	U	MG/KG	0.38	1.0
		Zinc, Total	0.24	U	MG/KG	0.24	1.0
BLANK1	0000370-MB1	Mercury, Total	0.02	U	MG/KG	0.02	1.0

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Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/14/00

CLIENT: THERMAFORD B00-054 H1103 RECRA LOT #: 00101894

WORK ORDER: 10988-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10MX7	Silver, Total	4.9	0.25u	4.9	100	1.0
		Arsenic, Total	187	3.5 u	195	95.9	1.0
		Barium, Total	264	63.5	195	103.2	1.0
		Beryllium, Total	5.0	0.29	4.9	96.2	1.0
		Cadmium, Total	4.3	0.47u	4.9	87.8	1.0
		Chromium, Total	27.4	7.8	19.5	100.5	1.0
		Copper, Total	48.2	15.1	24.3	103.3	1.0
		Mercury, Total	0.20	0.02	0.16	113.8	1.0
		Manganese, Total	380	331	48.6	101.2*	1.0
		Nickel, Total	57.1	10.1	48.6	96.7	1.0
		Lead, Total	49.2	3.6	48.6	93.8	1.0
		Antimony, Total	32.9	2.6 u	48.6	67.7	1.0
		Selenium, Total	181	5.0 u	195	93.7	1.0
		Thallium, Total	173	5.1 u	195	88.2	1.0
		Vanadium, Total	102	50.9	48.6	104.9	1.0
		Zinc, Total	89.6	41.4	48.6	99.2	1.0

14c

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/14/00

CLIENT: THERMAFORD H00-054 H1103 RECRA LOT #: 0010L994

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RSD		DILUTION FACTOR (RFP)
*001REP	S10KK7	Silver, Total	0.25u	0.25u	NC	1.0
		Arsenic, Total	3.8 u	3.8 u	NC	1.0
		Barium, Total	63.5	66.7	4.9	1.0
		Beryllium, Total	0.29	0.32	11.2	1.0
		Cadmium, Total	0.47u	0.47u	NC	1.0
		Chromium, Total	7.8	8.2	5.0	1.0
		Copper, Total	15.1	16.4	8.3	1.0
		Mercury, Total	0.02	0.02	18.4	1.0
		Manganese, Total	331	331	0.030	1.0
		Nickel, Total	10.1	10.6	4.4	1.0
		Lead, Total	3.6	4.7	36.5	1.0
		Antimony, Total	2.6 u	2.6 u	NC	1.0
		Selenium, Total	5.0 u	5.0 u	NC	1.0
		Thallium, Total	5.1 u	5.1 u	NC	1.0
		Vanadium, Total	50.9	51.3	0.78	1.0
		Zinc, Total	41.4	43.3	4.5	1.0

15

Received: 10.Jan.01 06:21 PM From: UnknownSender To: 2087238944
JAN 10 '01 04:21PM BHI S&D MANAGEMENT 509 372 9487
Powered by eFax.com Page: 1 of 2
P.1/2

Review Comment Record (RCR)

1. Date	2. Review No.
1/09/01	BHI/QA1001
3. Project	**4. Page**
100-NR-1	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
SDG No.: H1103	100-NR-1 TSD Sites Remedial Action Sampling – Soiul (Waste Site 120-N-2 Pond)	Claude Stacey	BHI/QA	H0-16/372-9208

17. Comment Submittal Approval:

Organization Manager (Optional) — Date

10. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact — Author/Originator

11. CLOSED

02/13/01 — Date

Reviewer/Point of Contact — Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Inorganics: Page 03 and 04 states the TDL for Ag and As were exceeded for all samples. Review of lab reported data indicates TDL for Ag and As are OK.		Correct R	
2	Inorganic and Wet Chemistry: Page 04, References the revision number for DOE/RL-96-22 should be 2 not 1.		Correct R	
3	Inorganic: Page 010, sample B10KX7, Be results are stated as 0.39U; whereas, lab results show 0.23.		Correct R	
4	Wet Chemistry: Page 01, Holding Times indicates holding time for CrVI to be 24 hours; whereas, the holding time for CrVI in soils is 28 days.		Correct R	
5	Wet Chemistry: Page 01, Holding Times indicates holding times for nitrate and nitrite two days. It is also indicated on page 02 that all holding times were met. According to the CoC the time from sampling to the time the lab received the samples was 72 hours (3 days); therefore; the nitrate and nitrite results by IC exceeded holding times.		Correct R	
6	Wet Chemistry: Page 010 list 2 rows of nitrite. The second nitrite should be nitrate.		Correct R	

TRANSMISSION RESULT REPORT (JAN 10 '01 04:22PM)

BHI S&D MANAGEMENT 509 372 9487

(AUTO)

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
069	MEMORY TX		12087238944	02/02	OK

ERRORS

1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION

1. Date 1/09/01	2. Review No. BHI/QA1001
3. Project 100-NR-1	4. Page Page 1 of 1

8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208

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e Stacey

isposition(s)

11. CLOSED

t of Contact

Date

Reviewed/Point of Contact

ator

Author/Originator

4. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status

Review Comment Record (RCR)

1. Date	2. Review No.
1/09/01	BHI/QA1001
3. Project	4. Page
100-NR-1	Page 1 of 1

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Author/Originator _____

11. CLOSED

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Review Comment Record (RCR)

No additional comments RZ 01-10-01

1. Date	2. Review No.
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100-NR-1	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
SDG No.: H1103	100-NR-1 TSD Sites Remedial Action Sampling – Soiul (Waste Site 120-N-2 Pond)	Claude Stacey	BHI/QA	H0-16/372-9208

17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Rich

Organization Manager (Optional) — Date

Reviewer/Point of Contact — Date

Reviewer/Point of Contact

Author/Originator

Author/Originator

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Here's Claude's comments on H03 like I thought you might like to see them. Stacey has no comments — so now I'm waiting for you. Let me know when you can get to this ...

Duncan, Jeanette M

From: Callison, Stacey W
Sent: Tuesday, January 09, 2001 3:37 PM
To: Duncan, Jeanette M
Subject: RE: H1103 EDD and Validation Review (120-N-2 Pond)

Jeanette -

No comments on validation. Yes please run a cross tab table. Thanks.

Stacey

-----Original Message-----
From: Duncan, Jeanette M
Sent: Tuesday, January 09, 2001 2:56 PM
To: Callison, Stacey W
Subject: H1103 EDD and Validation Review (120-N-2 Pond)

Stacey,

I have the EDD for H1103 (the one that was missing last week from the cross tab report you requested). Do you want me to run another cross tab?

Also, I gave you a validation report for H1103 (120-N-2 Pond) last Friday. I have Claude Stacey's comments, but I am still waiting for yours and Rich Weiss's. If you are not going to have any comments, please send me an e:mail saying so - so that I can close this review process out.

Thanks!

Jeanette