W03574 RECEIVED JUN 10 2002 EDMC 0057360

Date: 5 January 2002
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-TW-1&2 - Soil Sampling
Subject: Inorganics - Data Package No. W03574-STS (SDG No. W03574)

INTRODUCTION

This memo presents the results of data validation on Data Package No. W03574-STS prepared by Severn Trent Services (STS). 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
B12C63-A	8/2/01	Soil	C	See note 1
B12C64-A	8/2/01	Soil	C	See note 1
B12C88-A	8/5/01	Soil	C	See note 2
B12DB8-A	8/3/01	Soil	C	See note 2*
B12DB9-A	8/3/01	Soil	C	See note 2*
B12DC0-A	8/5/01	Soil	C	See note 2*

1 - Metals by 6010B (aluminum, bismuth, cadmium, calcium, chromium (total), copper, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, silver, sodium, vandium, zinc); mercury by 7470; chromium VI by 7196.
2 - Metals by 6010B (cadmium, chromium (total), copper, lead, nickel, silver); mercury by 7470; chromium VI by 7196.
* - Aluminum, bismuth, calcium, iron, magnesium, manganese, molybdenum, potassium, sodium, vanadium and zinc were cancelled per SDR B02-043.

Data validation was conducted in accordance with the BHI validation statement of work and the 200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan, DOE/RL-2000-38, Rev. 0, February 2001. 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 OBJECTIVES

- **Holding Times**

Analytical holding times for ICP metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements is 30 days for hexavalent chromium, 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Blanks**

Preparation (Method) 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 target required quantitation limit (TRQL), 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 IDL and less than or equal to the TRQL, 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 Blanks

No field blanks were submitted for analysis, therefore, no field blank data was available for review.

- **Accuracy**

Matrix Spike

Matrix spike 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 70-130%. Samples with a spike recovery of less than 25% and a sample result below the instrument detection limit (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 56%, the bismuth results in samples B12C63-A and B12C64-A were qualified as estimates and flagged "J".

All other matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within relative percent difference (RPD) limits of plus or minus 35% for soil samples. If RPD values are out of specification and the sample concentration is greater than five times the TRQL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the TRQL and the sample concentration is less than five times the TRQL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for laboratory duplicates are an RPD less than 35% for positive sample results greater than five times the TRQL or plus or minus 2 times the TRQL for positive sample results less than five times the TRQL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

All laboratory duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (B12C88-A/B12DC0-A) was submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

  Reported analytical detection levels are compared against 200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan, DOE/RL-2000-38, Rev. 0, February 2001 target required quantitation limits (TRQL) to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific TRQL.

- **Completeness**

  Data package No. W03574-STS was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). Due to the laboratory not analyzing for all requested analytes, the completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery of 56%, the bismuth results in samples B12C63-A and B12C64-A 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.

REFERENCES

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

DOE/RL-2000-38, Rev. 0, *200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan*, February 2001.

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: W03574	REVIEWER: TLI	DATE: 1/5/02	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bismuth	J	B12C63-A B12C64-A	Matrix spike recovery

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD																	
Laboratory: STS																	
Case:	SDG: W03574																
Sample Number		B12C83-A		B12C84-A		B12C88-A		B12D88-A		B12D89-A		B12DC0-A					
Remarks												Duplicate					
Sample Date		08/02/01		08/02/01		08/05/01		08/03/01		08/03/01		08/05/01					
Inorganics	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U				
Silver		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U				
Aluminum		7600		7830		AC		AC		AC		AC					
Calcium		9610		8030		AC		AC		AC		AC					
Cadmium	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U				
Chromium		7.1		10		8.0		11.1		9.2		8.0					
Copper	2.5	12.2		13.0		11.4		11.7		9.9		11.8					
Iron		18100		19800		AC		AC		AC		AC					
Magnesium		3820		4580		AC		AC		AC		AC					
Manganese		287		317		AC		AC		AC		AC					
Molybdenum		ND	U	ND	U	AC		AC		AC		AC					
Nickel	4	6.3		6.6		5.8		8.1		9.9		5.5					
Lead	10	4.5		5.9		ND	U	4.2		3.9		ND					
Vanadium		55.1		63.9		AC		AC		AC		AC					
Zinc		43.9		54.9		AC		AC		AC		AC					
Bismuth		ND	UJ	ND	UJ	AC		AC		AC		AC					
Potassium		1140		1120		AC		AC		AC		AC					
Sodium		551		848		AC		AC		AC		AC					
Mercury	0.2	0.089		0.035		ND	U	0.025		ND	U	ND	U				

ND = Not detected

AC = Analysis Cancelled

BECHTEL HANFORD, INC.

Client Sample ID: B12C63-A

TOTAL Metals

Lot-Sample #...: F1H090189-003 Matrix.....: SOLID
Date Sampled...: 08/02/01 Date Received..: 08/09/01
% Moisture.....: 5.9

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Silver	ND	1.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1A3
		Dilution Factor: 1		MDL.....: 0.11		
Aluminum	7600	21.3	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AA
		Dilution Factor: 1		MDL.....: 2.6		
Calcium	9610	531	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1AC
		Dilution Factor: 1		MDL.....: 10.2		
Cadmium	ND	0.53	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AD
		Dilution Factor: 1		MDL.....: 0.021		
Chromium	7.1	1.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AE
		Dilution Factor: 1		MDL.....: 0.096		
Copper	12.2	2.7	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AF
		Dilution Factor: 1		MDL.....: 0.40		
Iron	18100	10.6	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1AG
		Dilution Factor: 1		MDL.....: 2.4		
Magnesium	3820	531	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1AH
		Dilution Factor: 1		MDL.....: 10		
Manganese	287	1.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AJ
		Dilution Factor: 1		MDL.....: 0.064		
Molybdenum	ND	4.3	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AK
		Dilution Factor: 1		MDL.....: 0.92		
Nickel	6.3	4.3	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1AL
		Dilution Factor: 1		MDL.....: 0.91		
Lead	4.5	0.32	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1A4
		Dilution Factor: 1		MDL.....: 0.16		
Vanadium	55.1	5.3	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1A5
		Dilution Factor: 1		MDL.....: 0.41		
Zinc	43.9	2.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPVF1A6
		Dilution Factor: 1		MDL.....: 0.72		

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1/5/02

BECHTEL HANFORD, INC.

Client Sample ID: B12C63-A

TOTAL Metals

Lot-Sample #...: F1E090189-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Bismuth	ND UJ	21.3	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1A7
		Dilution Factor: 1		MDL.....: 2.3		
Potassium	1140	531	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1A8
		Dilution Factor: 1		MDL.....: 300		
Sodium	551	531	mg/kg	SW846 6010B	08/14-09/04/01	EHPVF1A9
		Dilution Factor: 1		MDL.....: 10.3		
Prep Batch #...: 1228153						
Mercury	0.089 B	0.11	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPVF1AQ
		Dilution Factor: 1		MDL.....: 0.026		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

11/5/02

BECHTEL HANFORD, INC.

Client Sample ID: B12C64-A

TOTAL Metals

Lot-Sample #...: F1H090189-005 Matrix.....: SOLID
Date Sampled...: 08/02/01 Date Received..: 08/09/01
% Moisture.....: 4.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1A3
		Dilution Factor: 1		MDL.....: 0.10		
Aluminum	7830	20.9	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AA
		Dilution Factor: 1		MDL.....: 2.5		
Calcium	8030	522	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1AC
		Dilution Factor: 1		MDL.....: 10.0		
Cadmium	ND	0.52	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AD
		Dilution Factor: 1		MDL.....: 0.021		
Chromium	10	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AE
		Dilution Factor: 1		MDL.....: 0.084		
Copper	13.0	2.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AF
		Dilution Factor: 1		MDL.....: 0.40		
Iron	19800	10.4	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1AG
		Dilution Factor: 1		MDL.....: 2.3		
Magnesium	4580	522	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1AH
		Dilution Factor: 1		MDL.....: 9.8		
Manganese	317	1.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AJ
		Dilution Factor: 1		MDL.....: 0.063		
Molybdenum	ND	4.2	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AK
		Dilution Factor: 1		MDL.....: 0.91		
Nickel	6.6	4.2	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AL
		Dilution Factor: 1		MDL.....: 0.90		
Lead	5.9	0.31	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AM
		Dilution Factor: 1		MDL.....: 0.16		
Vanadium	63.9	5.2	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AS
		Dilution Factor: 1		MDL.....: 0.41		
Zinc	54.9	2.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPVX1AS
		Dilution Factor: 1		MDL.....: 0.71		

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000023

BECHTEL HANFORD, INC.

Client Sample ID: B12C64-A

TOTAL Metals

Lot-Sample #...: F1H090189-005 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Bismuth	ND UJ	20.9	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1A7
		Dilution Factor: 1		MDL.....: 2.2		
Potassium	1120	522	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1A8
		Dilution Factor: 1		MDL.....: 295		
Sodium	848	522	mg/kg	SW846 6010B	08/14-09/04/01	EHPVX1A9
		Dilution Factor: 1		MDL.....: 10.1		
Prep Batch #...: 1228153						
Mercury	0.035 B	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPVX1NQ
		Dilution Factor: 1		MDL.....: 0.025		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

K
1/8/02

LOT # F1H090189

BECHTEL HANFORD, INC.

Client Sample ID: B12C88-A

TOTAL Metals

Lot-Sample #...: F1H090189-001 Matrix.....: SOLID
Date Sampled...: 08/05/01 Date Received..: 08/09/01
% Moisture.....: 3.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Cadmium	ND	0.52	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AD
		Dilution Factor: 1		MDL.....: 0.18		
Chromium	8.0	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AF
		Dilution Factor: 1		MDL.....: 0.31		
Copper	11.4	2.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AH
		Dilution Factor: 1		MDL.....: 0.39		
Lead	ND	10.4	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AK
		Dilution Factor: 1		MDL.....: 3.4		
Nickel	5.8	4.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AM
		Dilution Factor: 1		MDL.....: 0.89		
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPP21AP
		Dilution Factor: 1		MDL.....: 0.95		
Prep Batch #...: 1228153						
Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPP21A6
		Dilution Factor: 1		MDL.....: 0.025		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

1/5/02

BECHTEL HANFORD, INC.

Client Sample ID: B12DB8-A

TOTAL Metals

Lot-Sample #...: F1H090189-006 Matrix.....: SOLID
Date Sampled...: 08/03/01 Date Received..: 08/09/01
% Moisture.....: 3.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A8
		Dilution Factor: 1		MDL.....: 0.95		
Cadmium	ND	0.52	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A3
		Dilution Factor: 1		MDL.....: 0.18		
Chromium	11.1	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A4
		Dilution Factor: 1		MDL.....: 0.31		
Copper	11.7	2.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A5
		Dilution Factor: 1		MDL.....: 0.39		
Nickel	8.1	4.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A7
		Dilution Factor: 1		MDL.....: 0.89		
Lead	4.2 B	10.4	mg/kg	SW846 6010B	08/14-09/06/01	EHPV11A6
		Dilution Factor: 1		MDL.....: 3.4		
Prep Batch #...: 1228153						
Mercury	0.025 B	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPV11AQ
		Dilution Factor: 1		MDL.....: 0.028		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

2/5/02

000016

BECHTEL HANFORD, INC.

Client Sample ID: B12DB9-A

TOTAL Metals

Lot-Sample #...: F1H090189-004 Matrix.....: SOLID
Date Sampled...: 08/03/01 Date Received..: 08/09/01
% Moisture.....: 3.8

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A8
		Dilution Factor: 1		MDL.....: 0.96		
Cadmium	ND	0.52	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A3
		Dilution Factor: 1		MDL.....: 0.18		
Chromium	9.2	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A4
		Dilution Factor: 1		MDL.....: 0.31		
Copper	9.9	2.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A5
		Dilution Factor: 1		MDL.....: 0.39		
Nickel	9.9	4.2	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A7
		Dilution Factor: 1		MDL.....: 0.89		
Lead	3.9 B	10.4	mg/kg	SW846 6010B	08/14-09/06/01	EHPVM1A6
		Dilution Factor: 1		MDL.....: 3.4		
Prep Batch #...: 1228153						
Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPVM1AQ
		Dilution Factor: 1		MDL.....: 0.025		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

1/5/02

000017

BECHTEL HANFORD, INC.

Client Sample ID: E12DC0-A

TOTAL Metals

Lot-Sample #...: F1H090189-002 Matrix.....: SOLID
Date Sampled...: 08/05/01 Date Received..: 08/09/01
% Moisture.....: 3.2

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1226194						
Cadmium	ND	0.52	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1AX
		Dilution Factor: 1		MDL.....: 0.18		
Chromium	8.0	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1A0
		Dilution Factor: 1		MDL.....: 0.31		
Copper	11.8	2.6	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1A1
		Dilution Factor: 1		MDL.....: 0.39		
Lead	ND	10.3	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1A2
		Dilution Factor: 1		MDL.....: 3.3		
Nickel	5.6	4.1	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1A3
		Dilution Factor: 1		MDL.....: 0.89		
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHPTF1A4
		Dilution Factor: 1		MDL.....: 0.98		
Prep Batch #...: 1228153						
Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EHPTF1AE
		Dilution Factor: 1		MDL.....: 0.025		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

1/5/02

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/1/5201 2:10:00 AM
Lot-Sample No.:	J1H060240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12C63-A	COC No. :	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rsl/MDC, Rsl/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225462	Work Order: EHM4L1AA			Report DB ID: 9EHM4L10								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.693	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

000019

1/5/02

000008

TL Richland

tSTLRichSample V3.77 A67

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/2/01 6:20:00 AM
Lot-Sample No.:	J1H080240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12C84-A	COC No. :	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
tch: 1225482	Work Order: EHM4C1AA			Report DB ID: 9EHM4C10								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.601	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

1/5/02

000020

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TL Richland

4STLRchSample V3.77 A67

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/5/01 11:10:00 PM
Lot-Sample No.:	J1H080240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12C88--A	COC No. :	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225482	Work Order: EHM351AA			Report DB ID: 9EHM3510								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.601	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

Pm
1/5/02

000021

000010

TL Richland
STLRichSample V3.77 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/3/01 1:20:00 AM
Lot-Sample No.:	J1H080240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12DB8-A	COC No. :	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225482	Work Order: EHM4E1AA			Report DB ID: 9EHM4E10								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.575	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

1/5/02

000022

~~000011~~

TL Richland

rSTLRichSample V3.77 A07

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/3/01 5:06:00 AM
Lot-Sample No.:	J1H060240-	Report No.:	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12DB9-A	COC No.:	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1225482	Work Order: EHM371AA			Report DB ID: 9EHM3710								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/8/01		2.602	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

1/5/02

000023

000022

STL Richland

ISTLRchSample V3.77 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 19-Sep-01

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/5/01 11:10:00 PM
Lot-Sample No.:	J1H080240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12DC0-A	COC No. :	B01-058	Matrix:	SOIL SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225482	Work Order: EHM4J1AA			Report DB ID: 9EHM4J10								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.594	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

RL
1/5/02

000024

000025

TL Richland

tSTLRichSample V3.77 A07

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

September 11, 2001

Attention: Joan Kessner

Project Number	:	43018
SAF	:	B01-058
SDG	:	W03574
Number of Samples	:	six
Sample Matrix	:	soil
Data Deliverable	:	Summary
Date SDG Closed	:	August 8, 2001

II. Introduction

On August 9, 2001, six (6) "solid" samples were received by STL–St. Louis for chemical analysis. The samples were received at the St. Louis lab at a temperature of 7 degrees C. See the COC and CUR forms for details of sample condition and temperature. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. This report is not complete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see the attached methods summary sheet

Deviation from Request: The metals were done using method 6010B in place of 6010A.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

The MS recoveries for several metals were outside control limits. The spike data was flagged with an "N" qualifier. LCS recoveries met criteria.

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Duplicate were analyzed with each preparation batch per the protocol for each analysis.

The TOC MS recovery for sample B12C88-A was low and is flagged with an "N" qualifier. The analyst spiked sample B12C64 and the recovery is within limits. Both sets of data are reported.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for 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.

Reviewed and approved:

Marti Ward
St. Louis Project Manager

SEP 2001
RECEIVED

WP # F1H090189

SEVERN TRENT SERVICES

STL Richland
2800 George Washington Way
Richland, WA 99352-1613

Tel: 509 375 3131
Fax: 509 375 5590
www.stl-inc.com

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

September 19, 2001

Attention: Joan Kessner

SAF Number	:	B01-058
Date SDG Closed	:	August 8, 2001
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	W03574
Data Deliverable	:	45-Day / Summary

I. Introduction

On August 8, 2001, six soil samples were received at STL Richland (STLR) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9EHM3510	B12C88-A	SOIL	8/08/01
9EHM3710	B12DB9-A	SOIL	8/08/01
9EHM4C10	B12C64-A	SOIL	8/08/01
9EHM4E10	B12DB8-A	SOIL	8/08/01
9EHM4J10	B12DC0-A	SOIL	8/08/01
9EHM4L10	B12C63-A	SOIL	8/08/01

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was: **Chemical Analysis**
Chromium Hex by EPA method 7196

STL Richland is a part of Severn Trent Laboratories, Inc.

III. Quality Control

The analytical results for each analysis performed under SDG W03574 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in mg/L.

IV. Comments

Chemical Analyses

Chromium Hex by EPA method 7196:

The LCS, batch blank, samples, sample duplicate (B12DB9) and sample matrix spike (B12DB9) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for 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.

Reviewed and approved:

Jackie Waddell
Project Manager

SEP 2001
RECEIVED

St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-203	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
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	Depth 22.5 - 25	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SN/09/98/040008	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: Sal 7-19-01 Severn Trent Incorporated - St. Louis	Offsite Property No.: RSR 107054		Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Maximum Dose 3.0 mR β & 2.0 mR γ on bottles

Samples stored in Ref# 3A at the 3728 Shipping Facility on 8/3/01. Collector not available to relinquish samples on 8/8/01 for shipment. RT 8/8/01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	Cool 4°C		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL	60mL		
	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Data	Mercury 7470 (CU)		
	Sal 7-19-01			GST 8/8/01	Metals add on	for JNK	Sal 7-19-01			

SAMPLE ANALYSIS

W03574

Sample No.	Matrix *	Sample Date	Sample Time									TIC TO
B12DB8 - A	SOIL	8/3/01	0120		X			X			X	B12 B18

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Thomas Thomas	8/3/01 0800	Ref 3C	8/3/01 0800
Ref 3C	8.8.01 0600	R F Thorne	8.8.01 0600
R F Thorne	8.8.01 0600	FEDEX	
FEDEX		Jill Clark	080901 0900

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(2) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - SPPH-D~~ GST 8/8/01
(3) ICP Metals - 6010TR (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
~~(4) Gamma Spectroscopy (Carbon-132, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Metasium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - 3H; Isotopic Uranium~~ Sal 7-19-01

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

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

BHI-EE-011 (10/98)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-141	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.R.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, RJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E Depth 18 - 20.5		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SN/09/99/040008	Field Logbook No.: EL-1318	COA: B20TW2674C	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: DSA 7/18/01 Severn Trent Incorporated — St. Louis	Offsite Property No.: RSR 107054		Bill of Lading/Air Bill No.: WA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tritium Dose 3.0 MR/h / 3.5 MR/h on bottles

Samples stored in Ref. 3B at the 3728 Shipping Facility on 8/3/01. Collector not available to relinquish samples on 8/9/01 for shipment. 8.8.01

W03574

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	Cool 4°C		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL	60 mL		
	Chemistry Bar - 195 DSA 7/18/01	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (3) in Special Instructions DST 7/18/01	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Activity Scan DSA 7/18/01	Mercury 7/20/01		

Sample No.	Matrix*	Sample Date	Sample Time									
B12C84 - A	SOIL	8/2/01	0620		X			X			X	B1 & BT3
MW 8.9.01												

TIE TO

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / [illegible]	8/3/01 0815	Ref 3B	8/3/01 0815
Ref 3B	8-8-01 0600	[illegible]	8-8-01 0600
[illegible]	8-8-01 0600	FED EX	
FED EX		[illegible]	080901 0900

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(2) Semi-VOA - 8270A (AALOA) (Phenol/Phosphate); TPH-DRO Range - WTPH-DRO 7/24/01
(3) ICP Metals - 6010TR (Client List) [Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc]
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Actinides (Protium-234, Protium-238); Isotopic Plutonium; Isotopic Uranium (Uranium-233); Americium-241; Strontium-90; Iodine-129; Nickel-63; Technetium-99; Total U; Technetium-99; Total Uranium; Tritium-3H; Isotopic Uranium — DSA 7/18/01

Matrix*: S=Soil, SD=Sediment, SS=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, P=Paint, WI=Wipe, L=Liquid, V=Vegetation, Z=Other

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

BH-EE-011 (10/99)

St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-204	Page 1 of 1
Collector: Thomas G./Watson D. / Nilson	Company Contact: Todd, M.R. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, JJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E — Depth 29 - 31.5	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SN/09/98 / 0400008	Field Logbook No.: SL-1518 — COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: Sel 7-19-01 Severn Trent Incorporated - St. Louis	Offsite Property No.: RSR 107064	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Maximum Dose 1.3 B/1.6 γ on bottles

Samples stored in Ref. 3C at the 3718 Shipping Facility on 8/13/01. Collector not available to relinquish Samples on 8/8/01 for shipment. JT 8-8-01

W03574

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	Cool 4C		
Type of Container	sG	sG	sG	sG	sG	sG	sG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL	60 ml		
	Chromium Mar - 7196	See Item (1) in Special Instructions	VOA - Gases (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Alkalinity Bicarb	Mercury 7470-CV		
	RJN 8/8/01		RJN 8/8/01	RJN 8/8/01	Metals + add on	per JHK 8/8/01	RJN 8/8/01			

Sample No.	Matrix *	Sample Date	Sample Time									
B12D89 - A	SOIL	8/8/01	0500		X			XX			X	B12B79
								RJN 8/8/01				
mr 8.9.01												

TLCTD

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Gary Russell / Mark Lewis — Date/Time: 8/8/01	Received By/Stored In: Ref 3C — Date/Time: 8/8/01	
Relinquished By/Removed From: Ref 3C — Date/Time: 8.8.01	Received By/Stored In: R. Thorne — Date/Time: 8.8.01	
Relinquished By/Removed From: R. Thorne — Date/Time: 8.8.01	Received By/Stored In: FEDEX	
Relinquished By/Removed From: FED EX — Date/Time:	Received By/Stored In: Jill Clark — Date/Time: 08/08/01 0900	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045 RJN 8/8/01

(2) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - 8015B-D.

(3) ICP Metals - 6010TR (Client List) (Aluminum, Bismuth, Calcium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)

(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; Nuclear-239; Nickel-63; Strontium-90; Total-U; Total-Uranium; Tritium - 1H; Isotopic Uranium

Sel 7-19-01

Matrix *: A-Air, SS-Subsoil, SO-Soil, SD-Sludge, W-Water, O-Oil, A-Air, DS-Dust Solids, DL-Dust Liquids, T-Tissue, SD-Sludge, L-Liquid, W-Liquids, X-Other

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

BHI-CE-011 (10/99)

T. St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-140	Page 1 of 1
Collector: Thomas G./Watson D. / Nielson	Company Contact: Todd, M.R.	Telephone No.: (509) 373-0631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E Depth 14.5-15.5		SAF No.: B01-058	Air Quality ☐
Date Turnaround: 45 Days				
Ice Chest No.: SN/09/98/040008	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: DSL 7/18/01 Severn Trent Incorporated - St. Louis	Offsite Property No.: RSR 107054		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS: 3 MR.B on outside Jar; 2 MR.Y on outside Jar; No Alpha. BT 8/6/01 Dwell 100K cpm on outside Jar.

Samples stored in Ref.# 3B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/13/01 for shipment. TT 8/30/01

W03574

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	Cool 4°C		
Type of Container	s0	s0	s0	s0	s0	s0	s0	s0		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	8oz.	250mL	8oz.	250mL	120mL	250mL	8oz.	60mL		
	Chemistry Run - TVM 7/18/01 DSL	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (3) in Special Instructions BT 7/18/01	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Activity Scan DSL 7/18/01	Mercury 7/18/01		TIE TO

Sample No.	Matrix*	Sample Date	Sample Time									
B12C83 -A	SOIL	8/02/01	0210		X			X			X	B2 B12
												250g, 125g, 60g
MW 8.9.01												

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 0810	Todd & Site Trailer Ref	8/2/01 0810
Todd & Site Trailer Ref	8/2/01 0820	Greg Thomas/Greg Thomas	8/2/01 0820
Greg Thomas/Greg Thomas	8/2/01 0815	Ref 3B	8/2/01 0815
Ref 3B	8.8.01 0640	RFL	8.8.01 0640
RFL	8.8.01 0640	FEDEX	
FEDEX			08/09/01 1500

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrite, Nitrogen in Nitrate, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(2) Semi-VOA - 8270A (Add On) (Diethyl phosphate), 3784 Diesel Range - WTPH-D BST 7/18/01
(3) ICP Metals - 6010B (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(4) Gamma Spectroscopy - (Gamma GT, Gamma Sr, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium, Isotopic Uranium (Uranium-233/234, Uranium-235/236, Uranium-238); Alpha Spec - Add-on (Americium-241, Curium-244, Neptunium-237, Nickel-63, Strontium-89/90, Total-Sr, Technetium-99, Total Uranium, Tritium - TCC, Isotopic Uranium) DSL 7/18/01

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

LABORATORY SECTION	Received By		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		B01-058-285	Page 1 of 1
Collector: Thomas O./Watson D. / Nielson	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-35/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SN/09/99/046008	Field Logbook No.: EL-1518 - 1	COA: B20TW2674C	Method of Shipment: Fed EX	Date Turnaround: 45 Days
Shipped To: Severn Trent Incorporated - St. Louis	Offsite Property No.: RSR 107054		Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS: Maximum Days .6 MR B ( ) on bottle.

Samples stored in Ref 3A at the 3728 Shipping Facility on 8/16/01. Collector not available to relinquish samples on 8/8/01 for shipment. RT 8/8/01

SAMPLE ANALYSES

W03574

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	Cool 4C		
Type of Container	sG	sG	sG	sG	sG	sG	sG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	250mL	60mL	250mL	125mL	250mL	60mL	60ml		
	Chemistry Test - 7196	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Additional Items	Mercury 7470-CV		TIC TO
	7-19-01		RJT 8/3/01		Metals+ add on	PA-01 JHK	7-19-01			

Sample No.	Matrix *	Sample Date	Sample Time										
B12DC0 -A	SOIL	8-5-01	2310		X			X			X		B12BV0
													250g, 250g, 100g
AW 8-9-01													

CHAIN OF POSSESSION	Date/Time	Signature/Print Name	Date/Time
Relinquished By/Removed From: Greg Thomas Greg Thomas	0630 8-6-01	Received By/Stored In: Ref 3A	0630 8-6-01
Relinquished By/Removed From: Ref 3A	0600 8-8-01	Received By/Stored In: R. Thorson	0600 8-8-01
Relinquished By/Removed From: R. Thorson	0600 8-8-01	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX		Received By/Stored In: Jill Clark SR	08/08/01 0900
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045 RJT 8/3/01
(2) Semi-VOA - 8260A (Add-On) (Tributyl phosphate); TPH-Diesel Range - W-TPH-D 8/3/01
(3) ICP Metals - 6010B (Client List) (Aluminum, Bismuth, Calcium, Cobalt, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(4) Gamma Spectroscopy - (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Uranium (Uranium-233); Americium-241; Cesium-94; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - 3H; Isotopic Uranium SAR 7-17-01

Matrix *: S-Soil; SD-Sediment; SO-Solid; W-Water; O-Oil; A-Air; DI-Drum Solids; DL-Drum Liquids; T-Tissue; WI-Wipe; LI-Liquid; V-Vegetation; Z-Other

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

BHI-ES-011 (10/00)

L St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-165	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.R. Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: SN Air Quality ☐ Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	SAF No.: B01-058	
Ice Chest No.: SN 109/98 1040008	Field Logbook No.: HL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: DSC 7/18/01 SEVERN TRENT ~~TRANSBORA~~ ~~KNOXVILLE~~ STIONS	Offsite Property No.: RSR 107054	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS: Maximum Dose on bottle 16 MR B/SMEF

Samples stored in Ref. 3A at the 3728 Shipping Facility on 8/10/01. Collector not available to relinquish samples on 8/8/01 for shipment. RT 8.8.01

00005

W03574

	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis (1)	Sample Analysis (2)	Sample Analysis (3)	Sample Analysis (4)	Sample Analysis (5)	Sample Analysis (6)	Sample Analysis (7)	Sample Analysis (8)	Sample Analysis (9)
	Cool 4C	sG	1	120mL	Sample Analysis (1) in Special Instructions	Mercury - 7470 - (CV)	Chromium - 7196	Sample Analysis (2) in Special Instructions	VOA - 8260A (TCL)	Sample Analysis (3) in Special Instructions	Sample Analysis (4) in Special Instructions		TPH TO
	Cool 4C	sG	1	60mL	X	X	X	X					
	Cool 4C	sG	1	250mL									
	Cool 4C	sG	1	250mL									
	Cool 4C	sG	1	60mL									
	Cool 4C	sG	1	250mL									
	None	sG	1	250mL									

Sample No.	Matrix*	Sample Date	Sample Time
B12C88 - A	SOIL	8/5/01	2:10

B12B V0 250g 124g 60g

MMD 8.9.01

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0630 8/8/01	Ref 3A	0630 8/8/01
Ref 3A 3728	0600 8.8.01	RTHorne	0600 8.8.01
RTHorne	0600 8.8.01	FED EX	
FED EX		SR Clark SRL	080901 0900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - NWTPH-D → GST 8/5/01
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Actinides (Americium-241, Plutonium-238, Plutonium-239/240, Uranium-233/234, Uranium-235, Uranium-238); Strontium-90; Tritium; Total Alpha, Total Beta, Total Gamma, Tritium - 906, Strontium-90 DSC 7/18/01

Matrix*: S=Soil, SD=Sediment, SG=Sludge, W=Water, O=Oil, A=Air, SO=Stream Solids, SW=Stream Liquids, B=Brine, SS=Solids, L=Liquid, V=Vegetation, D=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

B01-058-140 | Page 1 of 1

Sector: 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 Depth 14.5-15.5	SAF No.: B01-058	
Chest No.: SM1-587	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: Fed-EX RIN 7/31/01 Hand del Nel - Govt. Vehicle
Shipped To: DSA 7/18/01 ST LOUIS Severn Trent Incorporated — RICHLAND RT 8.70	Offsite Property No.: RSR 106567		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

3MR B on outside jar
2MR V on outside jar
No Alpha

AT 8/02/01
Direct 110K cpm on outside jar

Samples stored in Ref.# 38 at the 3728 Shipping Facility on 8 3 01.
Collector not available to relinquish samples on 8/8/01 for shipment. PT 8.8.01 /SHB

(2) x 120g/100

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	PT 8/8/01	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL			
	Chromium Hex - 7196	See Item (1) in Special Instructions.	VOA - 8260A (TCL)	See Item (2) in Special Instructions. EM 8/8/01	See Item (3) in Special Instructions.	See Item (4) in Special Instructions.	Activity Scan			

Sample No.	Matrix *	Sample Date	Sample Time									
2C63-A EHM4L	SOIL	8/2/01	0210	X				X	X			B1BBT2

0026

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	08/10 8/2/01	TSI 1&2 Site Trailer Ref	08/10 8/2/01
Relinquished By/Removed From: TSI 1&2 Site Trailer Ref	Date/Time 0320 8/2/01	Received By/Stored In: Greg Thomas/Greg Thomas	Date/Time 0320 8/3/01
Relinquished By/Removed From: Greg Thomas/Greg Thomas	Date/Time 0815 8/3/01	Received By/Stored In: Ref 38	Date/Time 0815 8/3/01
Relinquished By/Removed From: Ref 38	Date/Time 0600 8-8-01	Received By/Stored In: R Thore	Date/Time 0600 8-8-01
Relinquished By/Removed From: R Thore/Ref 3B	Date/Time 0600 8-8-01	Received By/Stored In: R Thore	Date/Time 0600 8-8-01
Relinquished By/Removed From: R Thore	Date/Time 1100 8-8-01	Received By/Stored In: Roy Bowers	Date/Time 1100 8-8-01

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(2) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D
(3) ICP Metals - 6010TR (Client List) (Aluminum, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(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

Relinquished by: Roy Bowers 8-8-01 2:00 — Received by: 4000 comp 8-8-01 Audrey Klemenud 8-8-01

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

LABORATORY SECTION: Received By

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — Date/Time

H-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-205 | 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
Chest No.: Sm1 587	Field Logbook No.: EL-1518 - 1	COA: B20TW2674C	Method of Shipment: ~~Fed Ex~~ GN 8/3/01 Govt. Vehicle
Shipped To: Sal 7-19-01 ET 8-7-01 Severn Trent Incorporated ~~Richland~~ ST. LOUIS	Offsite Property No.: RSR 106567		Bill of Lading/Airbill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

Maximum Dose .6 MR B & γ on bottle

Samples stored in Ref. 3A at the 3728 Shipping Facility on 8/6/01. Collector not available to relinquish samples on 8/14/01 for shipment. RT 8-8-01

SAMPLE ANALYSIS

2 x 120 glass

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
Type of Container	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1		1
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL
	Chromium Hex - 7196	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Activity Scan

Sample No.	Matrix *	Sample Date	Sample Time										
12DC0-AHM45	SOIL	8-5-01	2310	X					X	X			B12BV0

TIC TO

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	Ref 3A 8/6/01	0630
[illegible] 3A	8.8.01 0600	R. Rhodes	8.8.01 0600
R. Thomas	8.8.01 1100	Doug Bowers 8-8-01 1100 (1000 cpm)	
Doug Bowers	8-8-01 12:00	Audrey Klemond	8-8-01 1200

SPECIAL INSTRUCTIONS

ET 8-7-01

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO3/NO2 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045 - 7-19-01
(2) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D
(3) ICP Metals - 6010B (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(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-230); ~~Americium-241; Carbon-14, Nickel-63, Strontium-90 (Total Beta Radiation-90/Total Strontium), Tritium - Hydrogen Gas~~

Matrix *: S-Soil; SD-Sediment; SL-Solid; SO-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

4-EE-011 (10/98)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B01-058-203

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 Depth 22.5 - 25	SAF No.: B01-058	
Chest No.: RT 88.01 ~~Safety~~ SM1587 Sol 7-19-01	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: ~~Fed EX~~ RN 8/2/01 Hand deliver. Govt Vehicle
Shipped To: Severn Trent Incorporated ~~Pittsburgh~~ ST LOUIS	Offsite Property No.: RSR 106567		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Maximum Dose 3.0 mR B & 2.4 mR γ on bottle

Samples stored in Ref.# 31 at the 3728 Shipping Facility on 8/3/01. Collector not available to relinquish samples on 8/8/01 for shipment. RT 8.8.01

SAMPLE ANALYSES
2 x 120 glass

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Ice/MeOH	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	60mL	250mL 8.7.01	120mL	250mL	60mL			
	Chromium Hex - 7196	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions	See Item (4) in Special Instructions	Activity Scan			

Sample No.	Matrix *	Sample Date	Sample Time									
12D88 EHM4E	SOIL	8/03/01	0120	X					X	X		B12BT8

TIE TO

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	08/3/01 0800	Ref 31	8/3/01 0800
Ref 31	8.8.01 0600	[illegible]	8.8.01 0600
[illegible]	8.8.01 0600	FEDEX	8.8.01
[illegible]	8.8.01 1100	Doug Bowers / Kenglaw	8-8-01 1100
Kenglaw	8-8-01 12:00	4000 gm / Lindsey Klemens	8-8-01 12:00

Signature/Print Names

SPECIAL INSTRUCTIONS
(1) ~~IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrite, Nitrogen in Nitrate, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~ Sol 7-19-01
(2) ~~Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - 8/TPH-D~~
(3) ~~ICP Metals - 6010TR (Client List) (Aluminum, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)~~
(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-228); Americium-241; Carbon-14; Magnesium-233; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - 3H; Isotopic Uranium~~ RT 8.7.01

Matrix *: Soil, SD-Sediment, SO-Solid, SL-Sludge, W-Water, O-Oil, A-Air, DS-Drum Solid, DL-Drum Liquid, 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

8-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-141 | Page 1 of 1

Inspector: 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: 300-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E Depth 18 - 20.5	SAF No.: B01-058	
Chest No.: Sa/o/ FT 8-01 Sml 587	Field Logbook No.: EL-1518	COA: B20TW2674C	Method of Shipment: ~~FED EX~~ RJN 7/31/01 Hand deliver - Govt. vehicle
Shipped To: DSA 7/18/01 ST LOUIS Severn Trent Incorporated ~~Richland~~	Offsite Property No.: RSR 106567		Bill of Lading/Air Bill No.: MJP

POSSIBLE SAMPLE HAZARDS/REMARKS

Maximum Dose 30 MR/H / 3.5 MR/H on bottles

Samples stored in Ref. # 3B at the 3728 Shipping Facility on 8/3/01. Collector not available to relinquish samples on 8/8/01 for shipment. FT 8-8-01

SAMPLE ANALYSIS

2 x 120 glass

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	RT 8/1/01 None	None			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	60mL	250mL	120mL	250mL	60mL			
	Cleanroom Hex - 7196	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions. DSA 7/18/01	See Item (4) in Special Instructions	Activity Scan			Tie TO
Sample No.	Matrix *	Sample Date	Sample Time									
2C64AEHM4C	SOIL	8/2/01	0620	X					X	X		B1FBT3

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0815 8/2/01	Ref 3B	0815 8/2/01
Ref 3B	0600 8.8.01	R.T.	0600 8.8.01
R.T. / Ethoren	1100 8.8.01	Doug Bowers	8-8-01 / 1100
Doug Bowers / Doug Bowers	8-8-01 / 12:00	A. Klimenud	8-8-01 12:00

SPECIAL INSTRUCTIONS

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

FT 8.7.01

Matrix *: S=Soil, SD=Sediment, SD=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

H-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

ctor omas G./Watson D. / Nielson	Company Contact Todd, M.E.	Telephone No. (509) 372-9631	Project Coordinator TRENT, SJ
ct Designation 0-TW-1 & 2 - Soil Sampling	Sampling Location B-38/200 E Depth 29-31.5		SAF No. B01-058
hest No. ~~SO169148~~ RT989 SM1567	Field Logbook No. EL-1518	COA B20TW2674C	Method of Shipment Fed-Ex RJN 8/3/01 Hand delivered govt. vehicle
ped To Sas 7-19-01 ST. LOUIS vers Trent Incorporated ~~Richland~~ RTB 7-01	Offsite Property No. PSR 106567		Bill of Lading/Air Bill No. N/A

Price Code 8N — Data Turnaround 45 Days — Air Quality ☐

SIBLE SAMPLE HAZARDS/REMARKS
Maximum Dose 1.38 / 1.6 r on bottles

Samples stored in Ref.# 31 at the 3728 Shipping Facility on 8/3/01. Collector not available to relinquish samples on 8/8/01 for shipment. RT 8-8-01

SAMPLE ANALYSES

2 x 120.9 lbs

Preservation		Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	HNO3	None				
Type of Container		sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)		1	1	1	1	1		1				
Volume		60mL	250mL	60mL	250mL	120mL	250mL	60mL				
		Chromium Hex - 7196	See Item (1) in Special Instructions	VOA - 8260A (TCL)	See Item (2) in Special Instructions	See Item (3) in Special Instructions 8-19-01	See Item (4) in Special Instructions	Activity Scan				
Sample No.	Matrix *	Sample Date	Sample Time									
DB9AEHM37	SOIL	8/3/01	0508	X			X	X			B12B79	

T, e, T

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Thomas/Watson	8/3/01 0800	Ref 31	8/3/01
Ref 31	8.8.01 0600	R Thomas	8.8.01
R Thomas	8.8.01 0600	FED EX	8.8.01
FED EX / RT	8.8.01 1100	Doug Bauman	8-8-01 1100
Doug Bauman / Doug Bauman	8-8-01 12:00	A Klimmend	8-8-01 12:00

SPECIAL INSTRUCTIONS

RT 8-7-01

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045 SJT 7-19-01
(2) Semi-VOA - 8270A (Add On) (Tributyl phosphate); TPH Diesel Range - WTPH-D
(3) ICP Metals - 6010TR (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(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-228); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - 3H; Isotopic Uranium

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

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

H-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-165	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 ☐
Chest No.: SM1-587	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: DSA 7/18/01 Severn Trent ~~TMA/RFGRA~~ ~~Lionville~~ St Louis	Offsite Property No.: RSR 106567		Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS
Maximum Dose on bottle .6 MR B/.5 MRT

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 8/16/01. Collector not available to relinquish samples on 8/18/01 for shipment. RT 8.8.01

SDG W03574
1 x 125 glass

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
Type of Container	RT 8.7.01	RT 8.7.01	aG	RT 8.7.01	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL			
	See item (1) in Special Instructions.	Mercury - 7470 (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. GST 8/5/01	See item (4) in Special Instructions. DSA 7/18/01			

Sample No.	Matrix *	Sample Date	Sample Time									
2C89-A EHM35	SOIL	8/5/01	2310	X	X	X	X					TIETO B12BVO

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 0630	Ref 3A	8/6/01 0630
Ref 3A	8.8.01 0600	R Thorne	8.8.01 0600
R Thorne	8.8.01 0600	FED EX	8.8.01 RT
R Thorne	8.8.01 1100	Doug Powers	8-8-01 1100
Doug Powers	8-8-01 12:00	Audrey Klemond 1000 CPM	8-8-01 12:00

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 - 350.0; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045.
(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - HTPH-D → GST 8/5/01
(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

RT 8.7.01

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

H-EE-011 (10/99)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200 TW 1&2			DATA PACKAGE: W03574		
VALIDATOR: TLI		LAB: ST		DATE: 23 Dec 01	
CASE:			SDG: W03574		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide	CRUI	
SAMPLES/MATRIX					
B12CG3-A B12CG34-A B12C88-A B12DD8-A					
B12DB9-A B12DC0-A					
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: Bismuth 5670 J 63A + 64A
al – ok 4X
Fe – ok 4X

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

Rresults supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: [illegible] for BS, BA+CO Analysis Cancelled

missed 33 analyses

Appendix 6

Additional Documentation Requested by Client

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H090189 Matrix.....: SOLID
Date Sampled...: 08/02/01 Date Received..: 08/09/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Manganese									
	287	53.1	337	mg/kg	93		SW846 6010B	08/14-09/06/01	EHPVF1C8
	287	53.1	342	mg/kg	103	1.5	SW846 6010B	08/14-09/06/01	EHPVF1C9
				Dilution Factor: 1					
Molybdenum									
	ND	106	100	mg/kg	94		SW846 6010B	08/14-09/06/01	EHPVF1DA
	ND	106	99.6	mg/kg	94	0.63	SW846 6010B	08/14-09/06/01	EHPVF1DC
				Dilution Factor: 1					
Nickel									
	6.3	53.1	54.9	mg/kg	91		SW846 6010B	08/14-09/06/01	EHPVF1DD
	6.3	53.1	55.6	mg/kg	93	1.2	SW846 6010B	08/14-09/06/01	EHPVF1DE
				Dilution Factor: 1					
Silver									
	ND	5.31	3.96	mg/kg	75		SW846 6010B	08/14-09/06/01	EHPVF1CA
	ND	5.31	4.00	mg/kg	75	0.98	SW846 6010B	08/14-09/06/01	EHPVF1CC
				Dilution Factor: 1					
Vanadium									
	55.1	53.1	108	mg/kg	99		SW846 6010B	08/14-09/06/01	EHPVF1CF
	55.1	53.1	94.1 N	mg/kg	73	13	SW846 6010B	08/14-09/06/01	EHPVF1CG
				Dilution Factor: 1					
Zinc									
	43.9	53.1	100	mg/kg	106		SW846 6010B	08/14-09/06/01	EHPVF1CH
	43.9	53.1	94.2	mg/kg	95	6.2	SW846 6010B	08/14-09/06/01	EHPVF1CJ
				Dilution Factor: 1					
Bismuth									
	ND	213	119 N	mg/kg	56		SW846 6010B	08/14-09/04/01	EHPVF1CK
	ND	213	147 N,*	mg/kg	69	21	SW846 6010B	08/14-09/04/01	EHPVF1CL
				Dilution Factor: 1					
Potassium									
	1140	5310	6120	mg/kg	94		SW846 6010B	08/14-09/04/01	EHPVF1CM
	1140	5310	6020	mg/kg	92	1.6	SW846 6010B	08/14-09/04/01	EHPVF1CN
				Dilution Factor: 1					
Sodium									
	551	5310	5550	mg/kg	94		SW846 6010B	08/14-09/04/01	EHPVF1CP
	551	5310	5450	mg/kg	92	1.8	SW846 6010B	08/14-09/04/01	EHPVF1CQ
				Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H090189 Matrix.....: SOLID
Date Sampled...: 08/02/01 Date Received..: 08/09/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1H090189-003 Prep Batch #...: 1226194									
Aluminum									
	7600	213	9220 N	mg/kg	764		SW846 6010B	08/14-09/06/01	EHPVF1CR
	7600	213	8530 N	mg/kg	441	7.7	SW846 6010B	08/14-09/06/01	EHPVF1CT
			Dilution Factor: 1						
Cadmium									
	ND	5.31	3.75 N	mg/kg	71		SW846 6010B	08/14-09/06/01	EHPVF1CW
	ND	5.31	3.92 N	mg/kg	74	4.4	SW846 6010B	08/14-09/06/01	EHPVF1CX
			Dilution Factor: 1						
Calcium									
	9610	5310	15200	mg/kg	105		SW846 6010B	08/14-09/04/01	EHPVF1CU
	9610	5310	16300	mg/kg	125	7.0	SW846 6010B	08/14-09/04/01	EHPVF1CV
			Dilution Factor: 1						
Chromium									
	7.1	21.3	27.3	mg/kg	95		SW846 6010B	08/14-09/06/01	EHPVF1C0
	7.1	21.3	28.4	mg/kg	100	4.1	SW846 6010B	08/14-09/06/01	EHPVF1C1
			Dilution Factor: 1						
Copper									
	12.2	26.6	41.6	mg/kg	111		SW846 6010B	08/14-09/06/01	EHPVF1C2
	12.2	26.6	38.6	mg/kg	99	7.4	SW846 6010B	08/14-09/06/01	EHPVF1C3
			Dilution Factor: 1						
Iron									
	18100	106	22500 N	mg/kg	202		SW846 6010B	08/14-09/04/01	EHPVF1C4
	18100	106	18300 N,*	mg/kg	195	21	SW846 6010B	08/14-09/04/01	EHPVF1C5
			Dilution Factor: 1						
Lead									
	4.5	53.1	51.8	mg/kg	89		SW846 6010B	08/14-09/06/01	EHPVF1CD
	4.5	53.1	50.9	mg/kg	87	1.8	SW846 6010B	08/14-09/06/01	EHPVF1CE
			Dilution Factor: 1						
Magnesium									
	3820	5310	9760	mg/kg	112		SW846 6010B	08/14-09/04/01	EHPVF1C6
	3820	5310	10000	mg/kg	117	2.8	SW846 6010B	08/14-09/04/01	EHPVF1C7
			Dilution Factor: 1						

(Continued on next page)

L St. Louis

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1E090189 Matrix.....: SOLID
Date Sampled...: 08/05/01 Date Received..: 08/09/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1E090189-001 Prep Batch #...: 1228153									
Mercury									
	ND	0.518	0.487	mg/kg	92		SW846 Hg Mod	08/16-08/17/01	EHPP21CM
	ND	0.518	0.480	mg/kg	90	1.4	SW846 Hg Mod	08/16-08/17/01	EHPP21CN

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1H090189 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1H140000-194 Prep Batch #...: 1226194						
Aluminum	ND	20.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AH
		Dilution Factor: 1				
Calcium	ND	500	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31AJ
		Dilution Factor: 1				
Iron	ND	10.0	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31AN
		Dilution Factor: 1				
Magnesium	ND	500	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31AP
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AQ
		Dilution Factor: 1				
Molybdenum	ND	4.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AR
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AW
		Dilution Factor: 1				
Zinc	ND	2.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AX
		Dilution Factor: 1				
Bismuth	ND	20.0	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31A0
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AA
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AK
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AC
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AL
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AD
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AM
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1H090189 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Lead	ND	10.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AE
		Dilution Factor: 1				
Lead	ND	10.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AV
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AF
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AT
		Dilution Factor: 1				
Potassium	ND	500	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31A1
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AG
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	08/14-09/06/01	EHXV31AU
		Dilution Factor: 1				
Sodium	ND	500	mg/kg	SW846 6010B	08/14-09/04/01	EHXV31A2
		Dilution Factor: 1				

MB Lot-Sample #: F1H160000-153 Prep Batch #...: 1228153

Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	08/16-08/17/01	EH3061AA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II

Date: 19-Sep-01

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03574

Lot-Sample No.: J1H060240- **Report No. :** 14332 **Matrix:** SOIL SOLID

Parameter	SpikeResult, Orig Rsl	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MD	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1225482	Work Order: EHM371AD			Report DB ID: EHM371DW			Orig Sa DB ID: 9EHM3710						
HEXCHROME	3.41E+01			0.0E+00	8.00E-02	mg/kg	N/A	85.40%	3.99E+01		9/6/01	2.602	EPA7196
	8.00E-02	RPD	2.0									G	
Batch: 1225482	Work Order: EHM371AE			Report DB ID: EHM371EW			Orig Sa DB ID: 9EHM3710						
HEXCHROME	6.68E+02			0.0E+00	8.00E-02	mg/kg	N/A	98.27%	6.80E+02		9/6/01	2.602	EPA7196
	8.00E-02	RPD	2.0									G	

Number of Results: 2

Comments:

000054

~~000014~~

TL Richland

stSTLRichMs V3.77 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

BLANK RESULTS

Date: 19-Sep-01

Lab Name: STL Richland

SDG: W03574

Lot-Sample No.: J1H130000-

Report No. : 14332

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225482	Work Order: EHW4A1AA			Report DB ID: EHW4A1AB								
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1. N/A	9/6/01		100.0 ML	EPA7196

Number of Results: 1

Comments:

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TL Richland

STLRichBlank V3.77 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 19-Sep-01

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03574	Collection Date:	8/3/01 5:08:00 AM
Lot-Sample No.:	J1H080240-	Report No. :	14332	Received Date:	8/8/01 12:00:00 PM
Client Sample ID:	B12DB9 DUP-A	COC No. :	B01-058	Matrix:	SOIL SOLID

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
atch: 1225482	Work Order: EHM371AF			Report DB ID: EHM371FR		Orig Sa DB ID: 9EHM3710						
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/6/01		2.602	EPA7196
	8.00E-02	RPD	0.0			3.00E-02		N/A			G	

Number of Results: 1

Comments:

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TL Richland

stSTLRichDupV3.77 A07

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

SDR # B02-044
Revision #: 0
Date Initiated: 08/9/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: TMA/RECRA; Severn Trent, Incorporated

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 4
ID Numbers: B12C88, B12C88-A, B12DC0, B12DC0-A
Matrix: SOIL
Collection Date: 08/05/01

Issue Background:
Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction
Type: Other
Description: Change of Quality Control Sample Type

Disposition:
Description: Sample B12C88 was originally collected as a laboratory comparison (split) sample associated with sample B12DC0. However, both samples were collected from a sample interval that contained elevated radiological contamination. The elevated radiological contamination limited the laboratories that could accept the samples for analysis (see SDR B01-101). Sample B12C88 and B12DC0 were subsequently subdivided into B12C88, B12C88-A, B12DC0, and B12DC0-A to facilitate shipping of the samples to laboratories that could accept the samples. As a result, the samples were not analyzed at different laboratories. Because the samples were collected from the same sample interval, sample B12C88 and B12C88-A effectively became field duplicates of samples B12DC0 and B12DC0-A.

Justification: Because the listed samples were analyzed at the same laboratories, sample B12C88 and B12C88-A could not be considered split samples of B12DC0 and B12DC0-A, respectively. However, the samples were collected from the same interval, B12C88 and B12C88-A can be considered field duplicates of B12DC0 and B12DC0-A, respectively.

Approval Signatures:

S. J. Trent — 1/9/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

SDR # B02-043
Revision #: 0
Date Initiated: 08/9/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 3
ID Numbers: B12DC0-A, B12DB9-A, B12DB8-A
Matrix: SOIL
Collection Date: 08/03/01 – 08/05/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Clarification of Direction

Description: Modification of Analytes to Report From the 6010A Metals Analysis

Disposition:

Description: The chain of custody for the listed samples requested metals analysis by method 6010A and report all "client list" metals. However, for these samples the Groundwater/Vadose Zone project requested that only cadmium, chromium, copper, nickel, silver, and lead be reported.

Justification: Metals data reported under the 6010A – Client List analysis are not needed for these samples.

Approval Signatures:

S. J. Trent 1/9/02
Project Coordinator (Print/Sign Name) Date

M. E. Todd
Task Manager (Print/Sign Name) Date

BHI-EE-109 (02/96)