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Albuquerque, NM 87123
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Data Validation Report for CH2M Hill Plateau Remediation Company

VSR12-020
183.7KE Soil Samples
Project 100-K

Chemical & Radiochemical Validation - Level C

Validation Performed By:


Eyda Hergenreder

Date: 07-31-12

Validation reviewed by:


Marcia Hilchey

Date: 08-02-12

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Date: 31 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: PCBs - Sample Data Group (SDG) L0040, SL1204, SL1219 and WSCF113438

INTRODUCTION

This memorandum presents the results of data validation for SDG L0040 prepared by Lionville Laboratory, SDGs SL1204 and SL1219 prepared by TestAmerica Laboratories, Inc. and SDG WSCF113438 prepared by WSCF Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Method
B2H1B7	12/08/11	Soil	C	8082A
B2H130	11/04/11	Soil	C	8082A
B2H132	11/04/11	Soil	C	8082A
B2H134	11/04/11	Soil	C	8082A
B2H124	11/08/11	Soil	C	8082A
B2H168	11/08/11	Soil	C	8082A
B2H170	11/08/11	Soil	C	8082A
B2H166	12/08/11	Soil	C	8082A

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). 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. 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 and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirements for PCBs are extraction within one year of sample collection and analysis within one year of sample extraction. Sample preservation requires chilling to 4 degrees Celsius.

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the matrix spike and laboratory control sample accuracy limits are 50% to 150%.

Surrogates

All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable.

SDG WSCF113438, aroclor-1254 was the only analyte reported for the MS/MSD. Method 8082A guidance specifies aroclor-1016 and aroclor-1260 for MS/MSD analyses. No sample data are qualified as a result.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

SDG WSCF113438, aroclor-1254 was the only analyte reported for the LCS. Method 8082A guidance specifies aroclor-1016 and aroclor-1260 for LCS analyses. No sample data are qualified as a result.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are $\pm 30\%$. When duplicate RPDs exceed the limits and have associated results $< 5X$ the SAP required detection limits with differences $< 2X$ the required detection limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD RPD values were acceptable with the following exception.

SDG L0040, the MS/MSD RPDs for aroclor-1016 and aroclor-1260 were above the acceptance limit. All results for sample B2H1B7 were non-detects and should be qualified as estimates and flagged "UJ."

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split results were acceptable.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs were above the requested calculated action level.

- **Completeness**

SDGs L0040, SL1204, SL1219 and WSCF113438 were 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

Minor deficiencies leading to qualification of sample B2H1B7 results as estimates were due to poor MS/MSD precision.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.
- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.
- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.
- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.
- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.
- **C** — This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
- **X** — This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful. The data should be considered unusable for decision-making purposes.
- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2
Summary of Data Qualification

PCB Data Qualification Summary			
SDG: L0040, SL1204, SL1219, WSCF113438	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Aroclor-1016, -1221, -1232, -1242, -1248, - 1254 & -1260	UJ	B2H1B7	Poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/27/2011 07:50

B2H1B7
1112057-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

Polychlorinated Biphenyls by SW846 8082

Aroclor 1016	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1221	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1232	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1242	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1248	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1254	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Aroclor 1260	UJ 27.6 U	27.6	ug/kg dry	1	L112221	12/15/2011	12/24/2011	8082
Surrogate: Decachlorobiphenyl	102 %	43-144			L112221	12/15/2011	12/24/2011	8082
Surrogate: Tetrachloro-meta-xylene	115 %	52-141			L112221	12/15/2011	12/24/2011	8082

EH
 07/31/12

000000029

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H130

GC Semivolatiles

Lot-Sample #....: F1K080484-001 Work Order #....: MNTVK2AD Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 Prep Date.....: 01/30/12 Analysis Date...: 02/01/12
 Prep Batch #....: 2030014
 Dilution Factor: 1
 % Moisture.....: 5.1 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Aroclor 1016	ND	35	ug/kg	9.2
Aroclor 1221	ND	35	ug/kg	9.2
Aroclor 1232	ND	35	ug/kg	9.2
Aroclor 1242	ND	35	ug/kg	9.2
Aroclor 1248	ND	35	ug/kg	9.2
Aroclor 1254	ND	35	ug/kg	5.8
Aroclor 1260	ND	35	ug/kg	5.8

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	102	(54 - 150)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H132

GC Semivolatiles

Lot-Sample #....: F1K080484-002 Work Order #....: MNTVX2AM Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 Prep Date.....: 01/30/12 Analysis Date...: 02/02/12
 Prep Batch #....: 2030014
 Dilution Factor: 1
 % Moisture.....: 6.0 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Aroclor 1016	ND	35	ug/kg	9.3
Aroclor 1221	ND	35	ug/kg	9.3
Aroclor 1232	ND	35	ug/kg	9.3
Aroclor 1242	ND	35	ug/kg	9.3
Aroclor 1248	ND	35	ug/kg	9.3
Aroclor 1254	8.4 J	35	ug/kg	5.8
Aroclor 1260	ND	35	ug/kg	5.8

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	92	(54 - 150)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H134

GC Semivolatiles

Lot-Sample #....: F1K080484-003 Work Order #....: MNTV12AM Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 Prep Date.....: 01/30/12 Analysis Date...: 02/02/12
 Prep Batch #....: 2030014
 Dilution Factor: 1
 % Moisture.....: 4.8 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Aroclor 1016	ND	35	ug/kg	9.2
Aroclor 1221	ND	35	ug/kg	9.2
Aroclor 1232	ND	35	ug/kg	9.2
Aroclor 1242	ND	35	ug/kg	9.2
Aroclor 1248	ND	35	ug/kg	9.2
Aroclor 1254	ND	35	ug/kg	5.8
Aroclor 1260	ND	35	ug/kg	5.8

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	58	(54 - 150)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H124

GC Semivolatiles

Lot-Sample #...: F1K160470-001 Work Order #...: MN3CC1AD Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 Prep Date.....: 11/18/11 Analysis Date...: 11/22/11
 Prep Batch #...: 1322140
 Dilution Factor: 1
 % Moisture.....: 3.6 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Aroclor 1016	ND	34	ug/kg	9.0
Aroclor 1221	ND	34	ug/kg	9.0
Aroclor 1232	ND	34	ug/kg	9.0
Aroclor 1242	ND	34	ug/kg	9.0
Aroclor 1248	ND	34	ug/kg	9.0
Aroclor 1254	ND	34	ug/kg	5.7
Aroclor 1260	ND	34	ug/kg	5.7

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	84	(54 - 150)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H168

GC Semivolatiles

Lot-Sample #...: F1K160470-002 Work Order #...: MN3DA1AK Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 Prep Date.....: 11/18/11 Analysis Date...: 11/22/11
 Prep Batch #...: 1322140
 Dilution Factor: 1
 % Moisture.....: 3.6 Method.....: SW846 8082

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Aroclor 1016	ND	34	ug/kg	9.1
Aroclor 1221	ND	34	ug/kg	9.1
Aroclor 1232	ND	34	ug/kg	9.1
Aroclor 1242	ND	34	ug/kg	9.1
Aroclor 1248	ND	34	ug/kg	9.1
Aroclor 1254	ND	34	ug/kg	5.7
Aroclor 1260	ND	34	ug/kg	5.7

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Decachlorobiphenyl	85	(54 - 150)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H170

GC Semivolatiles

Lot-Sample #...: F1K160470-003 Work Order #...: MN3DC1AK Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 Prep Date.....: 11/18/11 Analysis Date...: 11/23/11
 Prep Batch #...: 1322140
 Dilution Factor: 1
 % Moisture.....: 0.040 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Aroclor 1016	ND	33	ug/kg	8.7
Aroclor 1221	ND	33	ug/kg	8.7
Aroclor 1232	ND	33	ug/kg	8.7
Aroclor 1242	ND	33	ug/kg	8.7
Aroclor 1248	ND	33	ug/kg	8.7
Aroclor 1254	ND	33	ug/kg	5.5
Aroclor 1260	ND	33	ug/kg	5.5

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	65	(54 - 150)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

WSCF Analytical Results Report

Attention Scot Fitzgerald **Group #** WSCF113438
Department Organic, Semivolatiles

Sample # 113438001 **Matrix** SOIL
SAF# F11-095 **Sampled** 12/08/11
Sample ID B2H166 **Received** 12/08/11

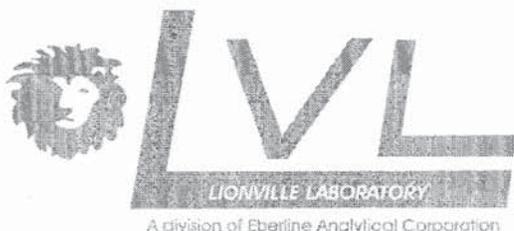
Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11
Aroclor-1221	11104-28-2	LA-523-427	U	<8		ug/kg	1	8	20	12/15/11
Aroclor-1232	11141-16-5	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11
Aroclor-1242	53469-21-9	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11
Aroclor-1248	12672-29-6	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11
Aroclor-1254	11097-69-1	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11
Aroclor-1260	11096-82-5	LA-523-427	U	<4		ug/kg	1	4	8	12/15/11

MDL = Minimum Detection B - Analyte was detected in both the BLANK and SAMPLE
RQ = Result Qualifier D - Analyte was reported at a secondary dilution factor.
TP Err = Total Propagated E - The calibration exceeds the calibration range (GC/MS).
DF = Dilution Factor J - Analyte < lowest calibration but >= MDL.
 + - Indicates more than nine qualifier N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
 U - Analyzed for but not detected above limiting criteria.
 X,Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



264 Welsh Pool Road
 Exton, Pennsylvania 19341
 Phone (610) 280-3000
 Fax (610) 280-3041

Case Narrative

Client: CHPRC HANFORD F11-095 L0040
LVL #: 1112057

Received: 12-13-2011

PCBs

One (1) soil sample was collected on 12-08-2011.

The sample and associated QC samples were extracted 12-15-2011 and analyzed 12-23,24-2011 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

Lionville Laboratory (LvL) is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from a sample that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The sample was reported on a dry weight basis.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 hardcopy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Brian Daniels
 LvL Laboratory Manager

12/29/11
 Date

- CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-376	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				PRICE CODE 8C	
ICE CHEST NO. 6WS-265		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'		SAF NO. F11-095	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7978 3174 2248	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		DATA TURNAROUND 15 Days / 15 Days	
				Cool~4C	Cool~4C	Cool~4C	Cool~4C
				HOLDING TIME	1 yr/1 yr	6 Months	30 Days
				TYPE OF CONTAINER	aG	G/P	G/P
				NO. OF CONTAINER(S)	1	1	1
				VOLUME	250mL	250mL	60mL
				SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196; IC Anions - 300.0 (Chloride, Sulfate);
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H1B7	SOIL	DEC 08 2011	0945	✓	✓	✓	✓

0000000004

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6010 (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010 (Supertrace Add-On) {Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Molybdenum, Nickel, Strontium, Tin, Vanadium, Zinc}; Mercury - 7471 - (CV);	
K.J. Young	DEC 08 2011 / 1030	M01109SSU #1	DEC 08 2011 / 1030		
M01109SSU #1	12/12/11 1000	K.J. Young	12/12/11 1000		
K.J. Young	12/12/11 1115	FED Ex			
FED Ex	12-13-11 / 0925		12-13-11 / 0925		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 January 25, 2012
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1204
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: November 8, 2011

II. Introduction

On November 8, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

This is a revised narrative to include discussion of Chloride detected in the method blank. Revision also includes updated data for PCB analysis to meet project required detection limit of 0.017 mg/kg.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

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THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

ICPMS Metals

Batch: 1314043

The samples were analyzed at a dilution for Boron due to the presence of matrix interferences which caused internal standard failures. The reporting limit has been adjusted for the dilution. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Cadmium and Tin were detected in the method blank at a concentration above the MDL but below the RL. The analytes were detected in the associated samples at concentrations greater than 4x the method blank result. No qualifier is required.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

The MS and/or MSD recovery for Manganese and Silver is outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. The analytes are qualified with an "N" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Due to LDR failures, the LDR has been lowered for Beryllium (200ppb). The MS/MSD results were above the LDR. The LCS and MS/MSD recoveries were within acceptable QC limits. The MS/MSD results are reported as estimated values.

Affected Samples:

F1K080484 (1): B2H130

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CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Batch: 1314044

Antimony was detected in the method blank at a concentration above the MDL but below the RL. The analyte is qualified accordingly in the associated samples.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Ion Chromatography**Batch: 1327106**

The associated sample was analyzed at dilution for Sulfate due to high concentrations of the target analyte. The reporting limit has been adjusted only for those samples reported from the dilution run. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (3): B2H134

Batch: 1325224

Chloride was detected in the method blank above the method detection limit but below the reporting limit. The analyte concentration in the associated samples is 5 times that detected in the method blank making qualifiers unnecessary.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

There were no observations or nonconformances for the following methods:

Mercury

PCBs

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

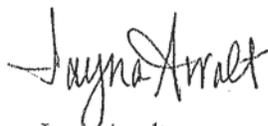
February 7, 2012_REVISED

SDG: SL1204

TestAmerica Laboratories, Inc.

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

Reviewed and approved:



Jayna Awalt
St. Louis Project Manager

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Order Number: 120124TASL-R7490

TestAmerica St. Louis
 13715 Rider Trail North
 Earth City, MO 63054

Sample Delivery Group: SL1204

Sample(s):

Method Name: 8082_PCB_GC

Sample #:	B2H130	Sample Date:	11/4/11 10:06 am	SAF #:	F11-095
Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)	
F1K080484001	1/24/2012 10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1260	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1254	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					

Deliver Report Results to: CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Richland, WA 99352-1234
 C/O Mr. Mike Neely

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Sample #: B2H134 Sample Date: 11/4/11 11:35 am SAF #: F11-095

Lab Sample ID	RDR Action	Start Date	Constituent	Action	TAT (Hardcopy/EDD)
F1K080484003	1/24/2012	10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF					

01/24/2012

LAB RESPONSE: SAMPLES WERE RE-ANALYZED TO MEET LIMITS OF 0.017 MG/KG. DATA HAS BEEN RE-SUBMITTED AND NARRATIVE REVISED. JKA 2/7/12

Deliver Report Results to: CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, WA 99352-1234
C/O Mr. Mike Neely

Problem and Discrepancy Report

TASL

SDG SL1204

1. The data package has the following issues:

- a) The results for the following constituents are stuck in staged results due to the electronic results having a J qualifier associated with them. The J qualifier does not appear in the hard copy data package and the qualifier is not appropriate for inorganic analyses. Samples affected are B2H130, B2H132, and B2H134. The J qualifier should be removed.
- b) The antimony results in the hard copy data package for sample B2H130 and B2H132 are C qualified. The C qualifier should be added to the electronic results.

Resolution: *Provide appropriate correction.*

Lab Response: J qualifiers removed from Chloride data in EDD and hardcopy report. Blank contamination discussed in narrative. C flag is updated for Antimony in EDD.

Please correct the issues and resubmit the electronic data package.

SL1204

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-289	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 2 183.7KE Pothole 1 Soil Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		PRICE CODE 8C DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. CWS-246		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'		AIR QUALITY <input type="checkbox"/> METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		ORIGINAL 7977 1119 3888	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours			
TYPE OF CONTAINER		aG	G/P	G/P			
NO. OF CONTAINER(S)		1	1	1			
VOLUME		250mL	250mL	60mL			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H130	SOIL	NOV 04 2011	1006	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLIC9SSU#1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 (Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260); (2) ICP Metals - 6020 (TAL) (Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc); ICP Metals - 6020 (Add-on) (Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium); Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN ABrunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1204 REVISED

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TestAmerica - St. Louis

SL1204

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-291	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION <i>183.2KE Soil Sample 3</i> 103.2KE Pothole 1 Soil Sample 2 <i>JA 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095 <i>202350 ESID</i>	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>CWS-246</i>		FIELD LOGBOOK NO. HNF-N-507- <i>24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>		COA <i>302548510</i> 302472510 <i>10/27/11</i>	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR <i>7977119 3888</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION	Cool~4C	Cool~4C	Cool~4C	<i>AW, 11/7/11</i>
	SPECIAL HANDLING AND/OR STORAGE		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
			TYPE OF CONTAINER	aG	G/P	G/P	
			NO. OF CONTAINER(S)	1	1	1	
			VOLUME	250mL	250mL	60mL	
			SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H132	SOIL	NOV 04 2011	1024				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young <i>[Signature]</i>	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN Mollo9SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM Mollo9SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young CHPRC <i>[Signature]</i>	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN ABurson <i>[Signature]</i>	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SL1204

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-293	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 2 183.2KE Pothole 1 Soil Sample 3 9A 11/7/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				SAF NO. F11-095 3023502510 9A 11/7/11	
ICE CHEST NO. CWS-246		FIELD LOGBOOK NO. HNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1'		COA 3025481510 3024725910 2/2 10/27/11	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 79771193888	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C	Cool~4C
			HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours
			TYPE OF CONTAINER		aG	G/P	G/P
			NO. OF CONTAINER(S)		1	1	1
			VOLUME		250mL	250mL	60mL
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME	
B2H134		SOIL		NOV 04 2011		1135	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN M01109 SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109 SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN A. Brunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1204 REVISED

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TestAmerica - St. Louis



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 December 9, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1219
Number of Samples	: three samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 16, 2011

II. Introduction

On November 16, 2011, three samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

PCB

Batch: 1322140

The CCV recovery was outside the lower QC limit of greater than 20% D for Aroclor 1260 and DCB indicating a potential low bias for these analytes in the samples associated with this CCV. Samples were re-analyzed with similar CCV failure indicating matrix interference present in the samples. Original results are reported.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

ICPMS Metals

Batch: 1322026

The ICV recovery was outside the upper QC limit (greater than 110%) for boron indicating a potential high bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

Mercury**Batch: 1326013**

The MSD recovery for mercury is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. This analyte has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

There were no observations or nonconformances for the following methods:

Chloride and Sulfate by IC

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

Reviewed and approved:



Michael Franks
St. Louis Project Manager

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-365	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 1	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-254	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7934-0995-4105		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours		
TYPE OF CONTAINER		aG	G/P	G/P		
NO. OF CONTAINER(S)		1	1	1		
VOLUME		250mL	250mL	60mL		
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H124	SOIL	NOV 08 2011	0944	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLOA SSV #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM MOLLOA SSV #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FedEx	DATE/TIME	
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Aburson Angela	DATE/TIME 0950	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME

CH2Mhill Plateau Remediation Company <i>SL1219</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-373	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 5	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>6WS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507.24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-#105</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours		
TYPE OF CONTAINER		aG	G/P	G/P		
NO. OF CONTAINER(S)		1	1	1		
VOLUME		250mL	250mL	60mL		
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H168	SOIL	NOV 08 2011	0944	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 08 2011 / 1045</i>	RECEIVED BY/STORED IN <i>Mollicassu #1</i>	DATE/TIME <i>NOV 08 2011 / 1045</i>	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM <i>Mollicassu #1</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>	RECEIVED BY/STORED IN <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1200</i>		
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME <i>NOV 15 2011 / 1310</i>	RECEIVED BY/STORED IN <i>FedEx</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	DATE/TIME	RECEIVED BY/STORED IN <i>ABrunser</i>	DATE/TIME <i>11/16/11 0930</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2M Hill Plateau Remediation Company <i>SL1219</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-375	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>6WS-254</i>		FIELD LOGBOOK NO. <i>HNF-N507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-4105</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	aG	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	
		VOLUME	250mL	250mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H170	SOIL	NOV 08 2011	0830	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLO9SSU #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1316	RECEIVED BY/STORED IN FED Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Molson	DATE/TIME 11/16/10950		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF113438

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Vanadium – Detected in the Blank and evaluated. No sample results in this batch were affected. “C” Flags not required.
- All other applicable QC controls are within the established limits.

Organic Comments

PCB – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gross Alpha / Gross Beta:
 - Gross Alpha – The Blank is less than two times the RDL. “B” Flag not required.
 - All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-371	PAGE 1 OF 2		
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days			
SAMPLING LOCATION 183.7KE Soil Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548E510		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL				
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A						
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) 113438 SPECIAL HANDLING AND/OR STORAGE	PRESERVATION				Cool-1C	Cool-1C	Cool-1C	None
		HOLDING TIME				1 yr/1 yr	6 Months	28 Days/48 Hours	6 Months
		TYPE OF CONTAINER				gC	gP	G/P	G/P
		NO. OF CONTAINER(S)				1	1	1	1
		VOLUME				250mL	250mL	60mL	120mL
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride Substa)	SEE ITEM (3) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B2H166	1 SOIL	DEC 08 2011	0945	✓	✓	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
K.J. Young	DEC 08 2011/1105	M. Nelson	DEC 08 2011/1105		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

PRINTED ON 12/5/2011

A 6002-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-371	PAGE 2 OF 2
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5859	PROJECT COORDINATOR TRENT, SJ	PRICE CODE BC	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KF Soil Sample 4	PROJECT DESIGNATION 183 KF/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	ORIGINAL	
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N507-211	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A				
<p>SPECIAL INSTRUCTIONS</p> <p>** The CACN for all analytical work at WSCF laboratory is 402114ES20. ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; (3) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};</p>						
<p>PRINTED ON 12/5/2011</p> <p style="text-align: right;">A-6003-618 (REV 2)</p>						

Tuesday, December 13, 2011 10:32:10 AM
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Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-020		
VALIDATOR: Eyda Hergenreder		LAB: Lionville Lab, TestAmerica, WSCF		DATE: 07-31-2012	
			SDG: L0040, SL1204, SL1219, WSCF113438		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082 X	SW-846 8081 (TCLP)	SW-846 8310	
<p>SAMPLES/MATRIX Soil samples</p> <p>SDG L0040: B2H1B7</p> <p>SDG SL1204: B2H130, B2H132, B2H134</p> <p>SDG SL1219: B2H124, B2H168, B2H170</p> <p>SDG WSCF113438: B2H166</p>					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

Initial calibrations acceptable?	Yes	No	N/A
Continuing calibrations acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Calculation check acceptable?	Yes	No	N/A
DDT and endrin breakdowns acceptable?	Yes	No	N/A

Comments:

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

Calibration blanks analyzed? (Levels D, E)	Yes	No	N/A
Calibration blank 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/trip blanks analyzed? (Levels C, D, E)	Yes	No	N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

Surrogates analyzed? Yes No N/A
 Surrogate recoveries acceptable? Yes No N/A
 Surrogates traceable? (Levels D, E) Yes No N/A
 Surrogates expired? (Levels D, E) Yes No N/A
 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:

SDG WSCF113438: aroclor-1254 was the analyte used for the MS/MSD and LCS

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

SDG L0040: MS/MSD RPD: Aroclor 1016 41%; Aroclor 1260 46%

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable?..... Yes No N/A

Positive results resolved acceptably?..... Yes No N/A

Comments:

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

7. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A

Sample holding times acceptable? Yes No N/A

Comments: None

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) Yes No N/A

Compound quantitation acceptable? (Levels D, E) Yes No N/A

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

Results 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: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

9. SAMPLE CLEANUP (Levels D and E)

Fluorisil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?.....	Yes	No	N/A
GPC check recoveries acceptable?.....	Yes	No	N/A
GPC calibration performed?.....	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?.....	Yes	No	N/A
Analytical batch QC given similar cleanup?.....	Yes	No	N/A
Transcription/Calculation Errors?.....	Yes	No	N/A

Comments:

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments:

More

Appendix 6

Additional Documentation Requested By Client



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: F11-095
Project Number: L0040
Project Manager: Scot Fitzgerald

Reported:
12/27/2011 07:50

Polychlorinated Biphenyls by SW846 8082 - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112221 - SW 3540C									
Blank (L112221-BLK1)					Prepared: 12/15/2011 Analyzed: 12/23/2011				
Aroclor 1016	26.0 U	26.0	ug/kg wet						
Aroclor 1221	26.0 U	26.0	ug/kg wet						
Aroclor 1232	26.0 U	26.0	ug/kg wet						
Aroclor 1242	26.0 U	26.0	ug/kg wet						
Aroclor 1248	26.0 U	26.0	ug/kg wet						
Aroclor 1254	26.0 U	26.0	ug/kg wet						
Aroclor 1260	26.0 U	26.0	ug/kg wet						
Surrogate: Decachlorobiphenyl	71.1		ug/kg wet	65.075		109	43-144		
Surrogate: Tetrachloro-meta-xylene	71.1		ug/kg wet	65.081		109	52-141		
LCS (L112221-BS1)					Prepared: 12/15/2011 Analyzed: 12/23/2011				
Aroclor 1016	255	25.2	ug/kg wet	315.92		81	50-138		
Aroclor 1260	298	25.2	ug/kg wet	315.92		94	50-148		
Surrogate: Decachlorobiphenyl	64.6		ug/kg wet	63.183		102	43-144		
Surrogate: Tetrachloro-meta-xylene	67.1		ug/kg wet	63.189		106	52-141		
Matrix Spike (L112221-MS1)					Source: 1112057-01 Prepared: 12/15/2011 Analyzed: 12/24/2011				
Aroclor 1016	307	27.7	ug/kg dry	346.89	27.6 U	89	50-138		
Aroclor 1260	351	27.7	ug/kg dry	346.89	27.6 U	101	50-148		
Surrogate: Decachlorobiphenyl	66.7		ug/kg dry	69.378		96	43-144		
Surrogate: Tetrachloro-meta-xylene	80.5		ug/kg dry	69.385		116	52-141		
Matrix Spike Dup (L112221-MSD1)					Source: 1112057-01 Prepared: 12/15/2011 Analyzed: 12/24/2011				
Aroclor 1016	197	27.0	ug/kg dry	338.04	27.6 U	58	50-138	41*	40
Aroclor 1260	215	27.0	ug/kg dry	338.04	27.6 U	63	50-148	46*	40
Surrogate: Decachlorobiphenyl	40.5		ug/kg dry	67.608		60	43-144		
Surrogate: Tetrachloro-meta-xylene	52.1		ug/kg dry	67.615		77	52-141		

000000030

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #....: SL1204 Work Order #....: MQGF41AA Matrix.....: SOLID
 MB Lot-Sample #: F2A300000-014
 Prep Date.....: 01/30/12
 Analysis Date...: 02/01/12 Prep Batch #....: 2030014
 Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082
	<u>PERCENT</u>	<u>RECOVERY</u>		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
Decachlorobiphenyl	102	(54 - 150)		

NOTE (S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #....: SL1204 Work Order #....: MQGF41AC Matrix.....: SOLID
 LCS Lot-Sample#: F2A300000-014
 Prep Date.....: 01/30/12 Analysis Date...: 02/01/12
 Prep Batch #....: 2030014
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>METHOD</u>
Aroclor 1016	167	148	ug/kg	89	SW846 8082
Aroclor 1260	167	164	ug/kg	99	SW846 8082
<u>SURROGATE</u>		<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>		
Decachlorobiphenyl		102	(74 - 140)		

NOTE (S) :

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #....: SL1204 Work Order #....: MNTVK1FV-MS Matrix.....: SOLID
 MS Lot-Sample #: F1K080484-001 MNTVK1FW-MSD
 Date Sampled...: 11/04/11 Date Received...: 11/08/11
 Prep Date.....: 01/30/12 Analysis Date...: 02/01/12
 Prep Batch #....: 2030014
 Dilution Factor: 1 % Moisture.....: 5.1

PARAMETER	SAMPLE	SPIKE	MEASRD	UNITS	PERCNT		METHOD
	AMOUNT	AMT	AMOUNT		RECVRY	RPD	
Aroclor 1016	ND	176	151	ug/kg	86		SW846 8082
	ND	176	151	ug/kg	86	0.41	SW846 8082
Aroclor 1260	ND	176	154	ug/kg	88		SW846 8082
	ND	176	155	ug/kg	88	0.40	SW846 8082

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	95	(54 - 150)
	96	(54 - 150)

NOTE (S) :

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

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: SL1219 Work Order #...: MN4WM1AA Matrix.....: SOLID
 MB Lot-Sample #: F1K180000-140
 Analysis Date...: 11/22/11 Prep Date.....: 11/18/11
 Dilution Factor: 1 Prep Batch #...: 1322140

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082
	PERCENT	RECOVERY		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
Decachlorobiphenyl	95	(54 - 150)		

NOTE (S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1219 Work Order #...: MN4WM1AC Matrix.....: SOLID
 LCS Lot-Sample#: F1K180000-140
 Prep Date.....: 11/18/11 Analysis Date...: 11/22/11
 Prep Batch #...: 1322140
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
Aroclor 1016	167	181	ug/kg	109	SW846 8082
Aroclor 1260	167	175	ug/kg	105	SW846 8082
<u>SURROGATE</u>		<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>		
Decachlorobiphenyl		88	(74 - 140)		

NOTE (S) :

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1219 Work Order #...: MN3CC1CK-MS Matrix.....: SOLID
 MS Lot-Sample #: F1K160470-001 MN3CC1CL-MSD
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 Prep Date.....: 11/18/11 Analysis Date...: 11/22/11
 Prep Batch #...: 1322140
 Dilution Factor: 1 % Moisture.....: 3.6

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT		METHOD
					RECVRY	RPD	
Aroclor 1016	ND	172	156	ug/kg	91		SW846 8082
	ND	173	156	ug/kg	90	0.19	SW846 8082
Aroclor 1260	ND	172	137	ug/kg	80		SW846 8082
	ND	173	143	ug/kg	83	4.1	SW846 8082

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Decachlorobiphenyl	81	(54 - 150)
	84	(54 - 150)

NOTE(S) :

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

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

Batch QC List**Group #** WSCF113438**Attention** Scot Fitzgerald
Department Organic, Semivolatiles

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
192646	192737	1	BLANK	66609	BLANK		PCBs by EPA SW-846 Method 8082
192646	192737	2	LCS	66610	LCS		PCBs by EPA SW-846 Method 8082
192646	192737	3	MS	66611	B2H166(113438001MS)	113438001	PCBs by EPA SW-846 Method 8082
192646	192737	4	MSD	66612	B2H166(113438001MSD)	113438001	PCBs by EPA SW-846 Method 8082
192646	192737	5	SAMPLE	113438001	B2H166		PCBs by EPA SW-846 Method 8082

Quality Control Report

Attention Scot Fitzgerald **Group #** WSCF113438
Department Organic, Semivolatiles

QC Batch 192646 **Test** PCBs by EPA SW-846 Method 8082
Associated Samples 113438001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
Aroclor-1016	12674-11-2	<4	<4	ug/kg					U	12/15/11
Aroclor-1221	11104-28-2	<8	<8	ug/kg					U	12/15/11
Aroclor-1232	11141-16-5	<4	<4	ug/kg					U	12/15/11
Aroclor-1242	53469-21-9	<4	<4	ug/kg					U	12/15/11
Aroclor-1248	12672-29-6	<4	<4	ug/kg					U	12/15/11
Aroclor-1254	11097-69-1	<4	<4	ug/kg					U	12/15/11
Aroclor-1260	11096-82-5	<4	<4	ug/kg					U	12/15/11
LCS										
QC Sample #66610										
Aroclor-1254	11097-69-1	76	76	ug/kg	94.8	75 - 128				12/15/11
MS										
QC Sample #66611										
Original 113438001										
Aroclor-1254	11097-69-1	<4	77	ug/kg	97.9	62 - 140				12/15/11
MSD										
QC Sample #66612										
Original 113438001										
Aroclor-1254	11097-69-1	<4	82	ug/kg	103.8	62 - 140	5.90	30	Paired 66611	12/15/11

Quality Control Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Organic, Semivolatiles

QC Batch 192646 Test PCBs by EPA SW-846 Method 8082

Associated Samples 113438001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE				Sample #113438001						
Tetrachloro-m-xylene	877-09-8				86.6	60 - 140				12/15/11
Decachlorobiphenyl	2051-24-3				86.3	60 - 140				12/15/11
BLANK				QC Sample #66609						
Tetrachloro-m-xylene	877-09-8				83.4	60 - 140				12/15/11
Decachlorobiphenyl	2051-24-3				84.6	60 - 140				12/15/11
LCS				QC Sample #66610						
Tetrachloro-m-xylene	877-09-8				81	60 - 124				12/15/11
Decachlorobiphenyl	2051-24-3				83.8	72 - 125				12/15/11
MS				QC Sample #66611						
Tetrachloro-m-xylene	877-09-8			Original 113438001	82.2	51 - 120				12/15/11
Decachlorobiphenyl	2051-24-3				89.8	66 - 126				12/15/11
MSD				QC Sample #66612						
Tetrachloro-m-xylene	877-09-8			Original 113438001	85.4	51 - 120	n/a		Paired 66611	12/15/11
Decachlorobiphenyl	2051-24-3				94.8	66 - 126	n/a			12/15/11

Date: 31 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: Inorganics - Sample Data Groups (SDGs) L0040, SL1204, SL1219 and WSCF113438

INTRODUCTION

This memorandum presents the results of data validation for SDG L0040 prepared by Lionville Laboratory, SDGs SL1204 and SL1219 prepared by TestAmerica Laboratories, Inc. and SDG WSCF113438 prepared by WSCF Analytical Laboratories,. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2H1B7	11/08/11	Soil	C	6010B & 7471A
B2H130	11/04/11	Soil	C	6020 & 7471A
B2H132	11/04/11	Soil	C	6020 & 7471A
B2H134	11/04/11	Soil	C	6020 & 7471A
B2H124	11/08/11	Soil	C	6020 & 7471A
B2H168	11/08/11	Soil	C	6020 & 7471A
B2H170	11/08/11	Soil	C	6020 & 7471A
B2H166	12/08/11	Soil	C	6020

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5, (SAP). 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. 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 and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirement for ICP metals are analysis within 180 days of sample collection and the holding time requirement for mercury is analysis within 28 days of sample collection. Sample preservation for all analytes requires chilling to 4 degrees Celsius.

The samples were analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exceptions.

For SDG L0040, the Cd and Sn laboratory blank results were > the method detection limits (MDLs) but < the reporting limits (RLs). The Cd result for sample B2H1B7 was a detect < the RL and should be qualified as non-detect at the RL (0.233 mg/kg) and flagged "U." The Sn result for sample B2H1B7 was non-detect and should not be qualified as a result.

For SDG SL1204, the Cd and Sb laboratory blank results were > the MDLs but < the RLs. The Sb results for sample B2H130 and B2H132 were detects > the RL but < 5X the blank value and based on professional judgment should be qualified "J." All Cd sample results and the Sb result for sample B2H134 were detects well above the RL and >5X the blank value and should not be qualified as a result.

For SDG WSCF113438, the V laboratory blank result was > the MDL but < the RL. The associated V sample result was significantly > the RL and > the 5X the blank value and should not be qualified as a result.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable with the following exceptions. Ba, Be, B, Co, Cu, Mn, Ni, Pb, Se, Sn, Sr, U and Zn were detected in equipment blank B2H170.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample results, and ICP-AES interference check sample results. According to the SAP, the matrix spike sample and the laboratory control sample accuracy limits are 70% to 130%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. The interference check sample limits are ones specified by the DV procedure.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

For SDG L0040, the MS recoveries for Sb and Mn were below the lower acceptance limit but $\geq 30\%$. Post digestion spike (PDS) were analyzed for both the Sb and Mn and the PDS recoveries were within the acceptance limit. The Sb result for sample B2H1B7 was non-detect and should be qualified as an estimate and flagged "UJ." The Mn result for sample B2H1B7 was a detect and should be qualified as an estimate and flagged "J."

For SDG SL1204, the MS and MSD recoveries for Ag were $< 30\%$. All sample results were detects and should be qualified as estimates and flagged "J-." The MS recovery for Mn was above the upper acceptance limit. All sample results were detects and should be qualified as estimates and flagged "J+." See the table in Appendix 2 for a listing of all affected sample results.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

ICP-AES Interference Check Samples (ICSs)

ICS data was not included in the data package. Sample results should not be qualified based on this.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, laboratory duplicate sample results, field duplicate sample results, field split sample results, and ICP serial dilution results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are $\pm 30\%$. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results $< 5X$ the SAP required detection limits (or $< 5X$ the laboratory reporting limits for analytes not listed in the SAP) with differences $< 2X$ the required detection limits no precision infraction occurred. The serial dilution limits are ones specified by the DV procedure.

MS/MSD Samples

All MS/MSD RPD values were acceptable.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split results were acceptable with the following exceptions.

Samples B2H1B7 and B2H166 had Cr RPD = 36% and Zn RPD = 32%.

ICP Serial Dilution Samples

ICS serial dilution data was not included in the data package. Sample results should not be qualified based on this.

- **ICP-MS Internal Standards**

The analysis of ICP-MS internal standards is used to determine the existences and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all samples (including QC) analyzed during the analytical run, beginning with the calibration.

ICP-MS internal standards data was not included in the data package. Sample results should not be qualified based on this.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs with associated non-detected sample results were below the CRDLs with the exception. The MDLs for Sb, B, Se, Ag and Sn for sample B2H1B7 were not reported. The samples results were reported non-detects at the RL.

- **Completeness**

SDGs L0040, SL1204, SL1219 and WSCF113438 were 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

Minor deficiencies leading to qualification of sample results as estimates were due to a laboratory blank infraction for Cd and Sb and matrix spike infractions for several analytes. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.
- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.
- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.
- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.
- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.
- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.
- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2
Summary of Data Qualification

Inorganic Data Qualification Summary			
SDGs: L0040, SL1204, SL1219, WSCF113438	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Cd	0.233U	B2H1B7	Laboratory blank contamination
Sb	J	B2H130, B2H132	Laboratory blank contamination
Sb	UJ	B2H1B7	Low matrix spike recovery
Mn	J	B2H1B7	Low matrix spike recovery
Ag	J-	B2H130, B2H132, B2H134	Very low matrix spike recoveries
Mn	J+	B2H130, B2H132, B2H134	High matrix spike recovery

Comments: None

Appendix 3

Annotated Laboratory Reports



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/19/2011 11:07

B2H1B7
1112057-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

Metals by SW846 6000/7000 series

Antimony	UJ 0.932	U	0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Arsenic	1.98		0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Barium	62.0		0.466	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Beryllium	0.347		0.186	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Boron	1.86	U	1.86	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Cadmium	0.233U 0.118	B	0.233	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Chromium	4.76		0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Cobalt	9.66		2.80	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Copper	18.0		1.86	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Lead	2.45		0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Manganese	J 417		0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Molybdenum	0.598	B	0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Nickel	7.05		2.33	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Selenium	0.932	U	0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Silver	0.932	U	0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Strontium	25.9		0.466	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Tin	4.66	U	4.66	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Vanadium	110		0.932	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Zinc	65.7		2.80	mg/kg dry	1	L112193	12/15/2011	12/16/2011	6010B
Mercury	0.0101	B	0.0258	mg/kg dry	1	L112205	12/14/2011	12/16/2011	7471A

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H130

TOTAL Metals

Lot-Sample #...: F1K080484-001

Matrix.....: SOLID

Date Sampled...: 11/04/11

Date Received...: 11/08/11

% Moisture.....: 5.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1314043						
Silver	J- 18.7 N	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1ED
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	2.4	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D0
		Dilution Factor: 1		MDL.....: 0.21		
Barium	70.2	2.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D1
		Dilution Factor: 1		MDL.....: 0.060		
Beryllium	0.27	0.11	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D2
		Dilution Factor: 1		MDL.....: 0.018		
Boron	ND D	52.7	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D3
		Dilution Factor: 5		MDL.....: 17.6		
Cadmium	4.0	0.053	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D4
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	57.9	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D5
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	5.1	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EJ
		Dilution Factor: 1		MDL.....: 0.47		
Copper	24.1	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D6
		Dilution Factor: 1		MDL.....: 0.067		
Manganese	J+ 388 N	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D8
		Dilution Factor: 1		MDL.....: 0.081		
Molybdenum	0.64	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D9
		Dilution Factor: 1		MDL.....: 0.081		
Nickel	8.6	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EA
		Dilution Factor: 1		MDL.....: 0.087		
Lead	4.7	0.32	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1D7
		Dilution Factor: 1		MDL.....: 0.11		
Selenium	1.8	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EC
		Dilution Factor: 1		MDL.....: 0.17		

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EH
07/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H130

TOTAL Metals

Lot-Sample #...: F1K080484-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Tin	1.2	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EF
			Dilution Factor: 1	MDL.....: 0.11		
Strontium	29.6	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EE
			Dilution Factor: 1	MDL.....: 0.22		
Uranium	0.50	0.11	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EK
			Dilution Factor: 1	MDL.....: 0.021		
Vanadium	93.2	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EG
			Dilution Factor: 1	MDL.....: 0.77		
Zinc	67.2	5.3	mg/kg	SW846 6020	11/11-11/23/11	MNTVK1EH
			Dilution Factor: 1	MDL.....: 1.4		
Prep Batch #...: 1314044						
Antimony	J 0.92 C	0.53	mg/kg	SW846 6020	11/15-11/18/11	MNTVK1A6
			Dilution Factor: 1	MDL.....: 0.068		
Prep Batch #...: 1314048						
Mercury	ND	0.033	mg/kg	SW846 7471A	11/11/11	MNTVK1A7
			Dilution Factor: 1	MDL.....: 0.011		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

D Result was obtained from the analysis of a dilution.

C Method blank contamination. The associated method blank contains the target analyte at a reportable level.

EH
07/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H132

TOTAL Metals

Lot-Sample #...: F1K080484-002

Matrix.....: SOLID

Date Sampled...: 11/04/11

Date Received...: 11/08/11

% Moisture.....: 6.0

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Prep Batch #...: 1314043						
Silver	J- 15.1 N	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A5
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	2.0	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AQ
		Dilution Factor: 1		MDL.....: 0.22		
Barium	81.7	2.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AR
		Dilution Factor: 1		MDL.....: 0.061		
Beryllium	0.37	0.11	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AT
		Dilution Factor: 1		MDL.....: 0.018		
Boron	ND D	53.2	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AU
		Dilution Factor: 5		MDL.....: 17.8		
Cadmium	1.8	0.053	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AV
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	87.6	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AW
		Dilution Factor: 1		MDL.....: 0.046		
Chromium	14.4	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1CA
		Dilution Factor: 1		MDL.....: 0.48		
Copper	23.6	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1AX
		Dilution Factor: 1		MDL.....: 0.068		
Manganese	J+ 361 N	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A1
		Dilution Factor: 1		MDL.....: 0.082		
Molybdenum	0.61	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A2
		Dilution Factor: 1		MDL.....: 0.082		
Nickel	10.5	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A3
		Dilution Factor: 1		MDL.....: 0.087		
Lead	21.5	0.32	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A0
		Dilution Factor: 1		MDL.....: 0.11		
Selenium	1.5	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A4
		Dilution Factor: 1		MDL.....: 0.17		

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EH
07/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H132

TOTAL Metals

Lot-Sample #...: F1K080484-002

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Tin	1.1	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A7
		Dilution Factor: 1		MDL.....: 0.11		
Strontium	31.9	0.53	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A6
		Dilution Factor: 1		MDL.....: 0.23		
Uranium	0.53	0.11	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1CC
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	88.8	1.1	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A8
		Dilution Factor: 1		MDL.....: 0.78		
Zinc	72.6	5.3	mg/kg	SW846 6020	11/11-11/23/11	MNTVX1A9
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1314044						
Antimony	J 0.60 C	0.53	mg/kg	SW846 6020	11/15-11/18/11	MNTVX1AH
		Dilution Factor: 1		MDL.....: 0.069		
Prep Batch #...: 1314048						
Mercury	0.16	0.033	mg/kg	SW846 7471A	11/11/11	MNTVX1AJ
		Dilution Factor: 1		MDL.....: 0.011		

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

D Result was obtained from the analysis of a dilution.

C Method blank contamination. The associated method blank contains the target analyte at a reportable level.

EH
07/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H134

TOTAL Metals

Lot-Sample #...: F1K080484-003

Matrix.....: SOLID

Date Sampled...: 11/04/11

Date Received...: 11/08/11

% Moisture.....: 4.8

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...:	1314043					
Silver	J- 0.072 B,N	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A5
		Dilution Factor: 1		MDL.....: 0.015		
Arsenic	11.0	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AQ
		Dilution Factor: 1		MDL.....: 0.21		
Barium	89.2	2.1	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AR
		Dilution Factor: 1		MDL.....: 0.060		
Beryllium	0.29	0.10	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AT
		Dilution Factor: 1		MDL.....: 0.018		
Boron	ND D	52.5	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AU
		Dilution Factor: 5		MDL.....: 17.5		
Cadmium	1.1	0.052	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AV
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	8.1	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AW
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	25.5	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNTV11CA
		Dilution Factor: 1		MDL.....: 0.47		
Copper	42.3	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNTV11AX
		Dilution Factor: 1		MDL.....: 0.067		
Manganese	J+ 290 N	0.52	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A1
		Dilution Factor: 1		MDL.....: 0.081		
Molybdenum	1.3	0.52	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A2
		Dilution Factor: 1		MDL.....: 0.081		
Nickel	23.0	0.52	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A3
		Dilution Factor: 1		MDL.....: 0.086		
Lead	32.9	0.31	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A0
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	0.69	0.52	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A4
		Dilution Factor: 1		MDL.....: 0.17		

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EH
07/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H134

TOTAL Metals

Lot-Sample #...: F1K080484-003

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Tin	4.4	0.21	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A7
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	55.9	0.52	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A6
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	1.6	0.10	mg/kg	SW846 6020	11/11-11/23/11	MNTV11CC
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	41.1	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A8
		Dilution Factor: 1		MDL.....: 0.77		
Zinc	352	5.2	mg/kg	SW846 6020	11/11-11/23/11	MNTV11A9
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1314044						
Antimony	2.8	0.52	mg/kg	SW846 6020	11/15-11/18/11	MNTV11AH
		Dilution Factor: 1		MDL.....: 0.068		
Prep Batch #...: 1314048						
Mercury	1.1	0.033	mg/kg	SW846 7471A	11/11/11	MNTV11AJ
		Dilution Factor: 1		MDL.....: 0.011		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

D Result was obtained from the analysis of a dilution.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H124

TOTAL Metals

Lot-Sample #...: F1K160470-001

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

% Moisture.....: 3.6

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Prep Batch #...: 1322026						
Silver	2.8	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AV
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	1.9	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AG
		Dilution Factor: 1		MDL.....: 0.21		
Barium	74.0	2.1	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AH
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.28	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AJ
		Dilution Factor: 1		MDL.....: 0.018		
Boron	6.6 B	10.4	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AK
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.19	0.052	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AL
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	32.2	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AM
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	4.2	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1A2
		Dilution Factor: 1		MDL.....: 0.47		
Copper	16.7	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AN
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	479	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AQ
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	0.54	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AR
		Dilution Factor: 1		MDL.....: 0.080		
Nickel	7.1	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AT
		Dilution Factor: 1		MDL.....: 0.085		
Lead	3.7	0.31	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AP
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	2.0	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AU
		Dilution Factor: 1		MDL.....: 0.16		

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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H124

TOTAL Metals

Lot-Sample #...: F1K160470-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Tin	0.84	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AX
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	30.9	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1AW
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.45	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1A3
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	96.1	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1A0
		Dilution Factor: 1		MDL.....: 0.76		
Zinc	61.6	5.2	mg/kg	SW846 6020	11/18-12/07/11	MN3CC1A1
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1322027						
Antimony	0.24 B	0.52	mg/kg	SW846 6020	11/19-12/07/11	MN3CC1A4
		Dilution Factor: 1		MDL.....: 0.067		
Prep Batch #...: 1326013						
Mercury	ND N	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN3CC1A5
		Dilution Factor: 1		MDL.....: 0.011		

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H168

TOTAL Metals

Lot-Sample #...: FLK160470-002

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

% Moisture.....: 3.6

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Prep Batch #...: 1322026						
Silver	2.0	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A3
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	2.1	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1N
		Dilution Factor: 1		MDL.....: 0.21		
Barium	72.9	2.1	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1P
		Dilution Factor: 1		MDL.....: 0.059		
Beryllium	0.27	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1Q
		Dilution Factor: 1		MDL.....: 0.018		
Boron	8.8 B	10.4	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1R
		Dilution Factor: 1		MDL.....: 3.5		
Cadmium	0.15	0.052	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1T
		Dilution Factor: 1		MDL.....: 0.017		
Cobalt	25.7	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1U
		Dilution Factor: 1		MDL.....: 0.045		
Chromium	5.3	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1D
		Dilution Factor: 1		MDL.....: 0.47		
Copper	18.2	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1V
		Dilution Factor: 1		MDL.....: 0.066		
Manganese	371	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1X
		Dilution Factor: 1		MDL.....: 0.080		
Molybdenum	0.57	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1O
		Dilution Factor: 1		MDL.....: 0.080		
Nickel	7.4	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1A1
		Dilution Factor: 1		MDL.....: 0.085		
Lead	4.4	0.31	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1W
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	1.8	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A1Z
		Dilution Factor: 1		MDL.....: 0.16		

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CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H168

TOTAL Metals

Lot-Sample #...: F1K160470-002

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
		LIMIT	UNITS			
Tin	0.79	0.21	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A5
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	29.8	0.52	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1A4
		Dilution Factor: 1		MDL.....: 0.22		
Uranium	0.42	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1AE
		Dilution Factor: 1		MDL.....: 0.021		
Vanadium	97.7	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1AA
		Dilution Factor: 1		MDL.....: 0.76		
Zinc	61.3	5.2	mg/kg	SW846 6020	11/18-12/07/11	MN3DA1AC
		Dilution Factor: 1		MDL.....: 1.4		
Prep Batch #...: 1322027						
Antimony	0.30 B	0.52	mg/kg	SW846 6020	11/19-12/07/11	MN3DA1AF
		Dilution Factor: 1		MDL.....: 0.067		
Prep Batch #...: 1326013						
Mercury	0.012 B,N	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN3DA1AG
		Dilution Factor: 1		MDL.....: 0.011		

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H170

TOTAL Metals

Lot-Sample #...: F1K160470-003

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

% Moisture.....: 0.040

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...	1322026					
Silver	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A3
		Dilution Factor: 1		MDL.....: 0.014		
Arsenic	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AN
		Dilution Factor: 1		MDL.....: 0.20		
Barium	4.3	2.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AP
		Dilution Factor: 1		MDL.....: 0.057		
Beryllium	0.055 B	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AQ
		Dilution Factor: 1		MDL.....: 0.017		
Boron	5.4 B	10.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AR
		Dilution Factor: 1		MDL.....: 3.3		
Cadmium	ND	0.050	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AT
		Dilution Factor: 1		MDL.....: 0.016		
Cobalt	0.12 B	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AU
		Dilution Factor: 1		MDL.....: 0.043		
Chromium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AD
		Dilution Factor: 1		MDL.....: 0.45		
Copper	0.16 B	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AV
		Dilution Factor: 1		MDL.....: 0.064		
Manganese	7.1	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AX
		Dilution Factor: 1		MDL.....: 0.077		
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A0
		Dilution Factor: 1		MDL.....: 0.077		
Nickel	0.12 B	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A1
		Dilution Factor: 1		MDL.....: 0.082		
Lead	0.45	0.30	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1AW
		Dilution Factor: 1		MDL.....: 0.10		
Selenium	0.33 B	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A2
		Dilution Factor: 1		MDL.....: 0.16		

(Continued on next page)

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H170

TOTAL Metals

Lot-Sample #...: F1K160470-003

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Tin	0.15 B	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A5
		Dilution Factor: 1		MDL.....: 0.10		
Strontium	0.64	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A4
		Dilution Factor: 1		MDL.....: 0.21		
Uranium	0.13	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A6
		Dilution Factor: 1		MDL.....: 0.020		
Vanadium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A4
		Dilution Factor: 1		MDL.....: 0.74		
Zinc	1.5 B	5.0	mg/kg	SW846 6020	11/18-12/07/11	MN3DC1A6
		Dilution Factor: 1		MDL.....: 1.3		
Prep Batch #...: 1322027						
Antimony	ND	0.50	mg/kg	SW846 6020	11/19-12/07/11	MN3DC1AF
		Dilution Factor: 1		MDL.....: 0.065		
Prep Batch #...: 1326013						
Mercury	ND N	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN3DC1AG
		Dilution Factor: 1		MDL.....: 0.011		

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

N Spiked analyte recovery is outside stated control limits.

WSCF Analytical Results Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Inorganic

Sample # 113438001
SAF# F11-095
Sample ID B2H166

Matrix SOIL
Sampled 12/08/11
Received 12/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										
Anions by IC										
Chloride	16887-00-6	LA-533-410	U	<3.1		mg/kg	1	3.1	21	12/19/11
Sulfate	14808-79-8	LA-533-410	B	6.76		mg/kg	1	5.8	55	12/19/11
ICPMS Prep										
ICP-MS										
Manganese	7439-96-5	LA-505-412		299		mg/kg	1	0.10	1.0	12/13/11
Nickel	7440-02-0	LA-505-412		6.53		mg/kg	1	0.10	1.0	12/13/11
Silver	7440-22-4	LA-505-412	U	<0.052		mg/kg	1	0.052	0.52	12/13/11
Antimony	7440-36-0	LA-505-412	U	<0.31		mg/kg	1	0.31	3.1	12/13/11
Barium	7440-39-3	LA-505-412		53.0		mg/kg	1	0.21	2.1	12/13/11
Beryllium	7440-41-7	LA-505-412	B	0.248		mg/kg	1	0.10	1.0	12/13/11
Cadmium	7440-43-9	LA-505-412	B	0.0538		mg/kg	1	0.052	0.52	12/13/11
Chromium	7440-47-3	LA-505-412		3.29		mg/kg	1	0.10	1.0	12/13/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.052	0.26	12/13/11
Copper	7440-50-8	LA-505-412		16.3		mg/kg	1	0.10	1.0	12/13/11
Vanadium	7440-62-2	LA-505-412		78.5		mg/kg	1	0.21	2.1	12/13/11
Zinc	7440-66-6	LA-505-412		47.5		mg/kg	1	1.0	10	12/13/11
Lead	7439-92-1	LA-505-412		2.16		mg/kg	1	0.052	0.52	12/13/11

MDL = Minimum Detection
 RQ = Result Qualifier
 TP Err = Total Propagated
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL (or EQL) but >= the IDL/MDL (Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X, Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Inorganic

Sample # 113438001
SAF# F11-095
Sample ID B2H166

Matrix SOIL
Sampled 12/08/11
Received 12/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Mercury	7439-97-6	LA-505-412	U	<0.052		mg/kg	1	0.052	0.21	12/13/11
Molybdenum	7439-98-7	LA-505-412	B	0.489		mg/kg	1	0.052	0.52	12/13/11
Strontium	7440-24-6	LA-505-412		23.6		mg/kg	1	0.10	1.0	12/13/11
Tin	7440-31-5	LA-505-412		0.563		mg/kg	1	0.052	0.52	12/13/11
Uranium	7440-61-1	LA-505-412		0.435		mg/kg	1	0.052	0.26	12/13/11
Arsenic	7440-38-2	LA-505-412	B	1.45		mg/kg	1	0.21	2.1	12/13/11
Selenium	7782-49-2	LA-505-412	U	<1.0		mg/kg	1	1.0	10	12/13/11
Boron	7440-42-8	LA-505-412	U	<0.52		mg/kg	1	0.52	5.2	12/13/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL (or EQL) but >= the IDL/MDL (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary dilution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X, Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



264 Welsh Pool Road
 Exton, Pennsylvania 19341
 Phone (610) 280-3000
 Fax (610) 280-3041

Case Narrative

Client: CHPRC HANFORD F11-095

LVL#: 1112057

SDG/SAF#: L0040/F11-095

W.O.#: 60049-001-001-0001-00

Date Received: 12-13-11

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

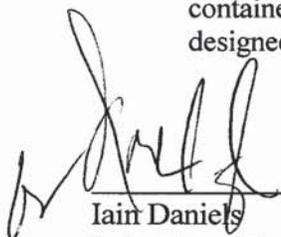
1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods listed on the data report forms.

The sample was analyzed without Yttrium as the internal standard due to the sample was suspected to contain Yttrium.
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvLI's sample acceptance policy.
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 LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, samples were greater than 20X MB value}.
8. All ICP Interference Check Standards were within control limits.
9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.
10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution

are performed. A PDS was prepared at meaningful concentration level for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
B2H1B7	Antimony	100	91.7
	Manganese	1,000	109.6

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit criteria. The \pm 20% RPD control limit applies to sample results greater than ten times the MDL. The sample results for Molybdenum and Lead were less than ten times the MDL.
13. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.
14. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 Iain Daniels
 Laboratory Manager
 Lionville Laboratory

12/20/14
 Date

alm/12-057

Lionville Laboratory Use Only
1112057

Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>CHPRC</u> <u>SAF# F11-095</u>		Refrigerator #		A		B		C		D											
Est. Final Proj. Sampling Date		#/Type Container		Liquid																	
Project#		Solid		1 gal		1 gal		1 gal		1 gal											
Project Contact/Phone#		Volume		Liquid																	
Lionville Laboratory Project Manager: <u>Orletta Johnson</u>		Solid		250		250		60		60											
QC <u>SW</u> Del <u>STD</u> TAT <u>15 days</u>		Preservatives		-		-		-		-											
Date Rec'd <u>12-13-11</u> Date Due <u>12-28-11</u>		ANALYSES REQUESTED		ORGANIC				INORG													
				VOA	BNA	PCB	PCB	Herb	Metal	HA	CN	Cr6	IC	ANON							
				Lionville Laboratory Use Only																	
MATRIX CODES:		Lab ID		Client ID/Description		Matrix QC Chosen (✓)		Matrix		Date Collected		Time Collected		8082		M211		CR6		ANON	
W Water						MS MSD															
WW Waste Water		01		B2H1B7		✓ ✓		S		12-8-11		0945		X		X		X		X	
GW Groundwater																					
WST Waste																					
WI Wipe																					
SO Solid																					
S Soil																					
SL Sludge																					
SE Sediment																					
PC Paint Chips																					
O Oil																					
NAL Non-Aqueous																					
Liquid																					
L Leachate																					
A Air																					
T Tissue																					
F Fish																					

Special Instructions:

Special Instructions:
 12/13/11 1. PCBs - do not report AR1262, AR1268 per client
 2.
 3.
 4.
 5. See end
 6.

Relinquished by	Received by	Date	Time
<i>[Signature]</i>	<i>[Signature]</i>	12-13-11	0925

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

- CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-376	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				PRICE CODE 8C	
ICE CHEST NO. GWS-265		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'		SAF NO. F11-095	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7978 3174 2248	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		DATA TURNAROUND 15 Days / 15 Days	
				Cool~4C	Cool~4C	Cool~4C	Cool~4C
				HOLDING TIME	1 yr/1 yr	6 Months	30 Days
				TYPE OF CONTAINER	aG	G/P	G/P
				NO. OF CONTAINER(S)	1	1	1
				VOLUME	250mL	250mL	60mL
				SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196; IC Anions - 300.0 (Chloride, Sulfate);
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H1B7	SOIL	DEC 08 2011	0945	✓	✓	✓	✓

0000000004

94 of 299

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME DEC 08 2011 / 1030	RECEIVED BY/STORED IN M1109SSU #1	DATE/TIME DEC 08 2011 / 1030	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6010 (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010 (Supertrace Add-On) {Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Molybdenum, Nickel, Strontium, Tin, Vanadium, Zinc}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M1109SSU #1	DATE/TIME 12/12/11 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME 12/12/11 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME 12/12/11 1115	RECEIVED BY/STORED IN FED Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED Ex	DATE/TIME 12-13-11 / 0925	RECEIVED BY/STORED IN J. Young	DATE/TIME 12-13-11 / 0925		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 January 25, 2012
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1204
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: November 8, 2011

II. Introduction

On November 8, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

This is a revised narrative to include discussion of Chloride detected in the method blank. Revision also includes updated data for PCB analysis to meet project required detection limit of 0.017 mg/kg.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

ICPMS Metals

Batch: 1314043

The samples were analyzed at a dilution for Boron due to the presence of matrix interferences which caused internal standard failures. The reporting limit has been adjusted for the dilution. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Cadmium and Tin were detected in the method blank at a concentration above the MDL but below the RL. The analytes were detected in the associated samples at concentrations greater than 4x the method blank result. No qualifier is required.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

The MS and/or MSD recovery for Manganese and Silver is outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. The analytes are qualified with an "N" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Due to LDR failures, the LDR has been lowered for Beryllium (200ppb). The MS/MSD results were above the LDR. The LCS and MS/MSD recoveries were within acceptable QC limits. The MS/MSD results are reported as estimated values.

Affected Samples:

F1K080484 (1): B2H130

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Batch: 1314044

Antimony was detected in the method blank at a concentration above the MDL but below the RL. The analyte is qualified accordingly in the associated samples.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Ion Chromatography**Batch: 1327106**

The associated sample was analyzed at dilution for Sulfate due to high concentrations of the target analyte. The reporting limit has been adjusted only for those samples reported from the dilution run. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (3): B2H134

Batch: 1325224

Chloride was detected in the method blank above the method detection limit but below the reporting limit. The analyte concentration in the associated samples is 5 times that detected in the method blank making qualifiers unnecessary.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

There were no observations or nonconformances for the following methods:

Mercury

PCBs

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

February 7, 2012_REVISED

SDG: SL1204

TestAmerica Laboratories, Inc.

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

Reviewed and approved:



Jayna Awalt
St. Louis Project Manager

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Order Number: 120124TASL-R7490

TestAmerica St. Louis
 13715 Rider Trail North
 Earth City, MO 63054

Sample Delivery Group: SL1204

Sample(s):

Method Name: 8082_PCB_GC

Sample #:	B2H130	Sample Date:	11/4/11 10:06 am	SAF #:	F11-095
Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)	
F1K080484001	1/24/2012 10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1260	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1254	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					

Deliver Report Results to: CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Richland, WA 99352-1234
 C/O Mr. Mike Neely

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Sample #: B2H134 Sample Date: 11/4/11 11:35 am SAF #: F11-095

Lab Sample ID	RDR Action	Start Date	Constituent	Action	TAT (Hardcopy/EDD)
F1K080484003	1/24/2012	10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF					

01/24/2012

LAB RESPONSE: SAMPLES WERE RE-ANALYZED TO MEET LIMITS OF 0.017 MG/KG. DATA HAS BEEN RE-SUBMITTED AND NARRATIVE REVISED. JKA 2/7/12

Deliver Report Results to: CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, WA 99352-1234
C/O Mr. Mike Neely

Problem and Discrepancy Report

TASL

SDG SL1204

1. The data package has the following issues:

- a) The results for the following constituents are stuck in staged results due to the electronic results having a J qualifier associated with them. The J qualifier does not appear in the hard copy data package and the qualifier is not appropriate for inorganic analyses. Samples affected are B2H130, B2H132, and B2H134. The J qualifier should be removed.
- b) The antimony results in the hard copy data package for sample B2H130 and B2H132 are C qualified. The C qualifier should be added to the electronic results.

Resolution: *Provide appropriate correction.*

Lab Response: J qualifiers removed from Chloride data in EDD and hardcopy report. Blank contamination discussed in narrative. C flag is updated for Antimony in EDD.

Please correct the issues and resubmit the electronic data package.

SL1204

CH2M Hill Plateau Remediation Company				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-289		PAGE 1 OF 1		
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C		DATA TURNAROUND 15 Days / 15 Days		
SAMPLING LOCATION 183.7KE Soil Sample 2 183.2KE Pothole 1 Soil Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>		METHOD OF SHIPMENT FEDERAL EXPRESS		
ICE CHEST NO. CWS-246		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'		COA 3022502510 302472510 10/27/11		BILL OF LADING/AIR BILL NO. 7977 1119 3888		ORIGINAL		
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				SEE PTR						
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C	Cool~4C				
				HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours				
				TYPE OF CONTAINER		aG	G/P	G/P				
				NO. OF CONTAINER(S)		1	1	1				
				VOLUME		250mL	250mL	60mL				
		SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};				
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME						
B2H130		SOIL		NOV 04 2011		1006						

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLIC9SSU#1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN ABrunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

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TestAmerica - St. Louis

SL1204

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-291	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION <i>183.2KE Soil Sample 3</i> 103.2KE Pothole 1 Soil Sample 2 <i>JA 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095 <i>202350 ESID</i>	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>CWS-246</i>		FIELD LOGBOOK NO. HNF-N-507- <i>24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>		COA <i>302548510</i> 302472510 <i>10/27/11</i>	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR <i>7977119 3888</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION	Cool~4C	Cool~4C	Cool~4C	<i>AW, 11/7/11</i>
			HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
			TYPE OF CONTAINER	aG	G/P	G/P	
			NO. OF CONTAINER(S)	1	1	1	
			VOLUME	250mL	250mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H132	SOIL	NOV 04 2011	1024				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young <i>[Signature]</i>	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN Mollo9SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM Mollo9SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young CHPRC <i>[Signature]</i>	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC <i>[Signature]</i>	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN ABurson <i>[Signature]</i>	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY			TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD			DISPOSED BY	DATE/TIME

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-293	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 2 183.2KE Pothole 1 Soil Sample 3 9A 11/7/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				SAF NO. F11-095 3023502510 9A 11/7/11	
ICE CHEST NO. 6WS-246		FIELD LOGBOOK NO. HNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1'		COA 3025481510 3024722510 2/2 10/27/11	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 79771193888	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C	Cool~4C
			HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours
			TYPE OF CONTAINER		aG	G/P	G/P
			NO. OF CONTAINER(S)		1	1	1
			VOLUME		250mL	250mL	60mL
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H134	SOIL	NOV 04 2011	1135	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN M01109 SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109 SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN A Brunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

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TestAmerica - St. Louis



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 December 9, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1219
Number of Samples	: three samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 16, 2011

II. Introduction

On November 16, 2011, three samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

PCB

Batch: 1322140

The CCV recovery was outside the lower QC limit of greater than 20% D for Aroclor 1260 and DCB indicating a potential low bias for these analytes in the samples associated with this CCV. Samples were re-analyzed with similar CCV failure indicating matrix interference present in the samples. Original results are reported.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

ICPMS Metals

Batch: 1322026

The ICV recovery was outside the upper QC limit (greater than 110%) for boron indicating a potential high bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

Mercury**Batch: 1326013**

The MSD recovery for mercury is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. This analyte has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

There were no observations or nonconformances for the following methods:

Chloride and Sulfate by IC

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

Reviewed and approved:



Michael Franks
St. Louis Project Manager

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-365	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 1	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-254	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7934-0995-4105		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	aG	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	
		VOLUME	250mL	250mL	60mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H124	SOIL	NOV 08 2011	0944	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLOA SSV #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);
RELINQUISHED BY/REMOVED FROM MOLLOA SSV #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FedEx	DATE/TIME	
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Aburson Angela	DATE/TIME 0950	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME

CH2M Hill Plateau Remediation Company <i>SL1219</i>		CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST			F11-095-375	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>6WS-254</i>		FIELD LOGBOOK NO. <i>HNF-N-507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-4105</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	aG	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	
		VOLUME	250mL	250mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H170	SOIL	NOV 08 2011	0830	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLO9SSU #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1316	RECEIVED BY/STORED IN FED Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Molson	DATE/TIME 11/16/10950		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF113438

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Vanadium – Detected in the Blank and evaluated. No sample results in this batch were affected. “C” Flags not required.
- All other applicable QC controls are within the established limits.

Organic Comments

PCB – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gross Alpha / Gross Beta:
 - Gross Alpha – The Blank is less than two times the RDL. “B” Flag not required.
 - All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-371	PAGE 1 OF 2		
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days			
SAMPLING LOCATION 183.7KE Soil Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE			
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548E510		ORIGINAL				
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A							
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) 113438 SPECIAL HANDLING AND/OR STORAGE	PRESERVATION				Cool-1C	Cool-1C	Cool-1C	None
HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours	6 Months				
TYPE OF CONTAINER		gC	gP	G/P	G/P				
NO. OF CONTAINER(S)		1	1	1	1				
VOLUME		250mL	250mL	60mL	120mL				
SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate)	SEE ITEM (3) IN SPECIAL INSTRUCTIONS				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B2H166	1 SOIL	DEC 08 2011	0945	✓	✓	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME DEC 08 2011	RECEIVED BY/STORED IN M. Nelson	DATE/TIME DEC 08 2011	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

PRINTED ON 12/5/2011

A 6002-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-371	PAGE 2 OF 2
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5859	PROJECT COORDINATOR TRENT, SJ	PRICE CODE BC	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KF Soil Sample 4	PROJECT DESIGNATION 183 KF/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	ORIGINAL	
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N507-211	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A				
<p>SPECIAL INSTRUCTIONS</p> <p>** The CACN for all analytical work at WSCF laboratory is 402114ES20. ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; (3) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};</p>						
<p>PRINTED ON 12/5/2011</p> <p style="text-align: right;">A-6003-618 (REV 2)</p>						

Tuesday, December 13, 2011 10:32:10 AM
Page 3 of 3

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-020		
VALIDATOR: Eyda Hergenreder		LAB: Lionville Lab, TestAmerica, WSCF		DATE: 07-31-2012	
			SDG: L0040, SL1204, WL1219, WSCF113438		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg X		EPA 200.8 X	
SAMPLES/MATRIX Soil samples SDG L0040: B2H1B7 SDG SL1204: B2H130, B2H132, B2H134 SDG SL1219: B2H124, B2H168, B2H170 SDG WSCF113438: B2H166					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

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:

SDG L0040: Cd 0.0473 mg/kg; Sn 1.16 mg/kg

SDG SL1204: Cd 0.017 mg/kg; Sb 0.31 mg/kg

SDG WSCF113438: V 0.614 mg/kg

EB sample B2H170: Ba 4.3 mg/kg; Be 0.055 mg/kg, B 5.4 mg/kg, Co 0.12 mg/kg, Cu 0.16 mg/kg, Mn 7.1 mg/kg, Ni 0.12 mg/kg, Pb 0.45 mg/kg, Se 0.33 mg/kg, Sn 0.15 mg/kg, Sr 0.64 mg/kg, U 0.13 mg/kg, Zn 1.5 mg/kg

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

SDG L0040: MS %R: Sb 31% (PDS 92%), Mn 63% (PDS 110%)
 SDG SL1204: Mn MS 125%, Ag MS/MSD 0%/0%

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

Field split: samples B2H1B7/B2H166: Cr RPD 36%, Zn RPD 32%

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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:

7. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments: None

More

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

8. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

Results 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:

SDG L0040: MDL could not be determined from information.

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: F11-095
Project Number: L0040
Project Manager: Scot Fitzgerald

Reported:
12/19/2011 11:07

Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112193 - SW 3050B										
Blank (L112193-BLK1)					Prepared: 12/15/2011 Analyzed: 12/16/2011					
Antimony	0.909	U	0.909	mg/kg wet						
Arsenic	0.909	U	0.909	mg/kg wet						
Barium	0.455	U	0.455	mg/kg wet						
Beryllium	0.182	U	0.182	mg/kg wet						
Boron	1.82	U	1.82	mg/kg wet						
Cadmium	0.0473	B	0.227	mg/kg wet						
Chromium	0.909	U	0.909	mg/kg wet						
Cobalt	2.73	U	2.73	mg/kg wet						
Copper	1.82	U	1.82	mg/kg wet						
Lead	0.909	U	0.909	mg/kg wet						
Manganese	0.909	U	0.909	mg/kg wet						
Molybdenum	0.909	U	0.909	mg/kg wet						
Nickel	2.27	U	2.27	mg/kg wet						
Selenium	0.909	U	0.909	mg/kg wet						
Silver	0.909	U	0.909	mg/kg wet						
Strontium	0.455	U	0.455	mg/kg wet						
Tin	1.16	B	4.55	mg/kg wet						
Vanadium	0.909	U	0.909	mg/kg wet						
Zinc	2.73	U	2.73	mg/kg wet						
Duplicate (L112193-DUP1)					Source: 1112057-01 Prepared: 12/15/2011 Analyzed: 12/16/2011					
Antimony	0.793	U	0.793	mg/kg dry		0.932 U				20
Arsenic	1.79		0.793	mg/kg dry		1.98		9.72		20
Barium	67.1		0.397	mg/kg dry		62.0		7.78		20
Beryllium	0.349		0.159	mg/kg dry		0.347		0.459		20
Boron	1.59	U	1.59	mg/kg dry		1.86 U				20
Cadmium	0.105	B	0.198	mg/kg dry		0.118		11.4		20
Chromium	4.50		0.793	mg/kg dry		4.76		5.50		20
Cobalt	8.36		2.38	mg/kg dry		9.66		14.4		20
Copper	17.9		1.59	mg/kg dry		18.0		0.512		20
Lead	1.99		0.793	mg/kg dry		2.45		20.3*		20
Manganese	343		0.793	mg/kg dry		417		19.5		20
Molybdenum	0.477	B	0.793	mg/kg dry		0.598		22.6*		20
Nickel	7.14		1.98	mg/kg dry		7.05		1.17		20
Selenium	0.793	U	0.793	mg/kg dry		0.932 U				20
Silver	0.793	U	0.793	mg/kg dry		0.932 U				20
Strontium	29.0		0.397	mg/kg dry		25.9		11.2		20

000000019



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/19/2011 11:07

Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112193 - SW 3050B									
Duplicate (L112193-DUP1)		Source: 1112057-01		Prepared: 12/15/2011		Analyzed: 12/16/2011			
Tin	0.851 B	3.97	mg/kg dry		4.66 U				20
Vanadium	104	0.793	mg/kg dry		110			6.36	20
Zinc	60.1	2.38	mg/kg dry		65.7			9.02	20
Matrix Spike (L112193-MS1)		Source: 1112057-01		Prepared: 12/15/2011		Analyzed: 12/16/2011			
Antimony	15.6	1.02	mg/kg dry	51.090	0.932 U	30.6*	75-125		20
Arsenic	185	1.02	mg/kg dry	204.36	1.98	89.5	75-125		20
Barium	276	0.511	mg/kg dry	204.36	62.0	105	75-125		20
Beryllium	5.14	0.204	mg/kg dry	5.1090	0.347	93.8	75-125		20
Boron	85.0	2.04	mg/kg dry	102.18	1.86 U	83.2	75-125		20
Cadmium	4.86	0.255	mg/kg dry	5.1090	0.118	92.9	75-125		20
Chromium	23.4	1.02	mg/kg dry	20.436	4.76	91.4	75-125		20
Cobalt	54.2	3.07	mg/kg dry	51.090	9.66	87.2	75-125		20
Copper	40.1	2.04	mg/kg dry	25.545	18.0	86.5	75-125		20
Lead	44.2	1.02	mg/kg dry	51.090	2.45	81.7	75-125		20
Manganese	449	1.02	mg/kg dry	51.090	417	62.6*	75-125		20
Molybdenum	91.4	1.02	mg/kg dry	102.18	0.598	88.9	75-125		20
Nickel	51.2	2.55	mg/kg dry	51.090	7.05	86.4	75-125		20
Selenium	176	1.02	mg/kg dry	204.36	0.932 U	86.2	75-125		20
Silver	4.88	1.02	mg/kg dry	5.1090	0.932 U	95.6	75-125		20
Strontium	135	0.511	mg/kg dry	102.18	25.9	107	75-125		20
Tin	77.9	5.11	mg/kg dry	102.18	4.66 U	76.3	75-125		20
Vanadium	161	1.02	mg/kg dry	51.090	110	98.4	75-125		20
Zinc	111	3.07	mg/kg dry	51.090	65.7	87.7	75-125		20
Reference (L112193-SRM1)				Prepared: 12/15/2011		Analyzed: 12/16/2011			
Antimony	44.4	3.00	mg/kg wet	53.000		83.7	0-235.8		
Arsenic	116	3.00	mg/kg wet	114.00		102	82.8-117.54		
Barium	333	1.50	mg/kg wet	307.00		108	79.8-120.2		
Beryllium	107	0.600	mg/kg wet	108.00		99.4	82.8-117.6		
Boron	80.3	6.00	mg/kg wet	85.100		94.4	67.5-132.8		
Cadmium	228	0.750	mg/kg wet	225.00		101	83.6-116.4		
Chromium	83.8	3.00	mg/kg wet	77.200		108	73.3-126.4		
Cobalt	165	9.00	mg/kg wet	166.00		99.2	80.7-118.7		
Copper	268	6.00	mg/kg wet	271.00		98.7	80.8-119.2		
Lead	191	3.00	mg/kg wet	190.00		100	81.6-118.4		
Manganese	905	3.00	mg/kg wet	965.00		93.8	69.3-130.5		
Molybdenum	238	3.00	mg/kg wet	235.00		101	76.2-123.8		

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264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: F11-095
Project Number: L0040
Project Manager: Scot Fitzgerald

Reported:
12/19/2011 11:07

Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112193 - SW 3050B									
Reference (L112193-SRM1)					Prepared: 12/15/2011 Analyzed: 12/16/2011				
Nickel	225	7.50	mg/kg wet	221.00		102	79.6-120.8		
Selenium	191	3.00	mg/kg wet	187.00		102	75.9-124.6		
Silver	84.4	3.00	mg/kg wet	83.500		101	82.7-117.1		
Strontium	198	1.50	mg/kg wet	175.00		113	69.7-130.3		
Tin	99.1	15.0	mg/kg wet	101.00		98.1	77.3-122.8		
Vanadium	113	3.00	mg/kg wet	98.700		115	75.9-123.6		
Zinc	201	9.00	mg/kg wet	199.00		101	78.4-121.6		
Batch L112205 - SW 7471A Prep									
Blank (L112205-BLK1)					Prepared: 12/14/2011 Analyzed: 12/16/2011				
Mercury	0.0281 U	0.0281	mg/kg wet						
Duplicate (L112205-DUP2)					Source: 1112057-01 Prepared: 12/14/2011 Analyzed: 12/16/2011				
Mercury	0.0245 U	0.0245	mg/kg dry		0.0101				20
Matrix Spike (L112205-MS2)					Source: 1112057-01 Prepared: 12/14/2011 Analyzed: 12/16/2011				
Mercury	0.172	0.0258	mg/kg dry	0.14360	0.0101	113	75-125		
Reference (L112205-SRM1)					Prepared: 12/14/2011 Analyzed: 12/16/2011				
Mercury	1.32	0.0273	mg/kg wet	1.2900		102	62.6-138		

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1204

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K100000-043 Prep Batch #...: 1314043						
Arsenic	ND	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AD
		Dilution Factor: 1				
Boron	ND	10.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AE
		Dilution Factor: 1				
Cadmium	0.017 B	0.050	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AV
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AG
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AH
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AJ
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AK
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AL
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AM
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AN
		Dilution Factor: 1				
Silver	ND	0.20	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AP
		Dilution Factor: 1				
Strontium	ND	0.50	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AQ
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #....: SL1204

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Tin	0.11 B	0.20	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AR
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AW
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AT
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	11/11-11/23/11	MNWFD1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1K100000-044 Prep Batch #....: 1314044

Antimony	0.31 B	0.50	mg/kg	SW846 6020	11/15-11/18/11	MNWFF1AA
		Dilution Factor: 1				

MB Lot-Sample #: F1K100000-048 Prep Batch #....: 1314048

Mercury	ND	0.033	mg/kg	SW846 7471A	11/11/11	MNXFN1AA
		Dilution Factor: 1				

NOTE(S) :

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1204

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
LCS Lot-Sample#: F1K100000-043 Prep Batch #...: 1314043							
Arsenic	109	112	mg/kg	102	SW846 6020	11/11-11/23/11	MNWFD1AX
			Dilution Factor: 2.5				
Barium	325	320	mg/kg	99	SW846 6020	11/11-11/23/11	MNWFD1A0
			Dilution Factor: 2.5				
Beryllium	92.0	93.1	mg/kg	101	SW846 6020	11/11-11/23/11	MNWFD1A1
			Dilution Factor: 2.5				
Boron	142	149	mg/kg	105	SW846 6020	11/11-11/23/11	MNWFD1A2
			Dilution Factor: 2.5				
Cadmium	110	119	mg/kg	108	SW846 6020	11/11-11/23/11	MNWFD1A3
			Dilution Factor: 2.5				
Cobalt	133	150	mg/kg	113	SW846 6020	11/11-11/23/11	MNWFD1A4
			Dilution Factor: 2.5				
Copper	74.7	77.9	mg/kg	104	SW846 6020	11/11-11/23/11	MNWFD1A5
			Dilution Factor: 2.5				
Lead	152	169	mg/kg	111	SW846 6020	11/11-11/23/11	MNWFD1A6
			Dilution Factor: 2.5				
Manganese	443	482	mg/kg	109	SW846 6020	11/11-11/23/11	MNWFD1A7
			Dilution Factor: 2.5				
Molybdenum	82.5	96.6	mg/kg	117	SW846 6020	11/11-11/23/11	MNWFD1A8
			Dilution Factor: 2.5				
Nickel	109	122	mg/kg	112	SW846 6020	11/11-11/23/11	MNWFD1A9
			Dilution Factor: 2.5				
Selenium	207	235	mg/kg	114	SW846 6020	11/11-11/23/11	MNWFD1CA
			Dilution Factor: 2.5				
Silver	52.0	51.6	mg/kg	99	SW846 6020	11/11-11/23/11	MNWFD1CC
			Dilution Factor: 2.5				
Strontium	111	122	mg/kg	110	SW846 6020	11/11-11/23/11	MNWFD1CD
			Dilution Factor: 2.5				

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1204

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Tin	135	134	mg/kg	99	SW846 6020	11/11-11/23/11	MNWFD1CE
			Dilution Factor: 2.5				
Vanadium	110	112	mg/kg	102	SW846 6020	11/11-11/23/11	MNWFD1CF
			Dilution Factor: 2.5				
Zinc	299	327	mg/kg	109	SW846 6020	11/11-11/23/11	MNWFD1CG
			Dilution Factor: 2.5				
Chromium	93.4	96.3	mg/kg	103	SW846 6020	11/11-11/23/11	MNWFD1CH
			Dilution Factor: 2.5				
Uranium	100	109	mg/kg	109	SW846 6020	11/11-11/23/11	MNWFD1CJ
			Dilution Factor: 1				
LCS Lot-Sample#: F1K100000-044 Prep Batch #... : 1314044							
Antimony	50.0	47.1	mg/kg	94	SW846 6020	11/15-11/18/11	MNWFF1AC
			Dilution Factor: 1				
LCS Lot-Sample#: F1K100000-048 Prep Batch #... : 1314048							
Mercury	0.167	0.168	mg/kg	101	SW846 7471A	11/11/11	MNXFN1AC
			Dilution Factor: 1				

NOTE(S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1204
 Date Sampled...: 11/04/11

Date Received...: 11/08/11

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F1K080484-001 Prep Batch #...: 1314043

% Moisture.....: 5.1

Arsenic

2.4	105	99.3	mg/kg	92			SW846 6020	11/11-11/23/11	MNTVK1EL
2.4	105	98.1	mg/kg	91	1.1		SW846 6020	11/11-11/23/11	MNTVK1EM

Dilution Factor: 1

Barium

70.2	105	168	mg/kg	93			SW846 6020	11/11-11/23/11	MNTVK1EN
70.2	105	180	mg/kg	104	6.4		SW846 6020	11/11-11/23/11	MNTVK1EP

Dilution Factor: 1

Beryllium

0.27	105	118	mg/kg	112			SW846 6020	11/11-11/23/11	MNTVK1EQ
0.27	105	117	mg/kg	111	1.3		SW846 6020	11/11-11/23/11	MNTVK1ER

Dilution Factor: 1

Boron

ND	105	101 D	mg/kg	96			SW846 6020	11/11-11/23/11	MNTVK1ET
ND	105	97.5 D	mg/kg	93	3.4		SW846 6020	11/11-11/23/11	MNTVK1EU

Dilution Factor: 5

Cadmium

4.0	105	105	mg/kg	96			SW846 6020	11/11-11/23/11	MNTVK1EV
4.0	105	105	mg/kg	96	0.24		SW846 6020	11/11-11/23/11	MNTVK1EW

Dilution Factor: 1

Chromium

5.1	105	101	mg/kg	91			SW846 6020	11/11-11/23/11	MNTVK1FQ
5.1	105	100	mg/kg	90	0.40		SW846 6020	11/11-11/23/11	MNTVK1FR

Dilution Factor: 1

Cobalt

57.9	105	142	mg/kg	80			SW846 6020	11/11-11/23/11	MNTVK1EX
57.9	105	143	mg/kg	81	0.52		SW846 6020	11/11-11/23/11	MNTVK1EO

Dilution Factor: 1

Copper

24.1	105	114	mg/kg	85			SW846 6020	11/11-11/23/11	MNTVK1E1
24.1	105	113	mg/kg	84	0.66		SW846 6020	11/11-11/23/11	MNTVK1E2

Dilution Factor: 1

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1204
Date Sampled...: 11/04/11

Date Received...: 11/08/11

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Lead									
	4.7	105	107	mg/kg	98		SW846 6020	11/11-11/23/11	MNTVK1E3
	4.7	105	110	mg/kg	100	2.4	SW846 6020	11/11-11/23/11	MNTVK1E4
Dilution Factor: 1									
Manganese									
	388	105	523 N	mg/kg	128		SW846 6020	11/11-11/23/11	MNTVK1E5
	388	105	509	mg/kg	115	2.6	SW846 6020	11/11-11/23/11	MNTVK1E6
Dilution Factor: 1									
Molybdenum									
	0.64	105	102	mg/kg	96		SW846 6020	11/11-11/23/11	MNTVK1E7
	0.64	105	101	mg/kg	95	0.90	SW846 6020	11/11-11/23/11	MNTVK1E8
Dilution Factor: 1									
Nickel									
	8.6	105	103	mg/kg	90		SW846 6020	11/11-11/23/11	MNTVK1E9
	8.6	105	103	mg/kg	89	0.24	SW846 6020	11/11-11/23/11	MNTVK1FA
Dilution Factor: 1									
Selenium									
	1.8	105	101	mg/kg	94		SW846 6020	11/11-11/23/11	MNTVK1FC
	1.8	105	99.7	mg/kg	93	0.77	SW846 6020	11/11-11/23/11	MNTVK1FD
Dilution Factor: 1									
Silver									
	18.7	10.5	16.5 N	mg/kg	0.0		SW846 6020	11/11-11/23/11	MNTVK1FE
	18.7	10.5	17.6 N	mg/kg	0.0	0.0	SW846 6020	11/11-11/23/11	MNTVK1FF
Dilution Factor: 1									
Strontium									
	29.6	105	133	mg/kg	99		SW846 6020	11/11-11/23/11	MNTVK1FG
	29.6	105	143	mg/kg	107	6.6	SW846 6020	11/11-11/23/11	MNTVK1FH
Dilution Factor: 1									
Tin									
	1.2	105	103	mg/kg	96		SW846 6020	11/11-11/23/11	MNTVK1FJ
	1.2	105	105	mg/kg	99	2.3	SW846 6020	11/11-11/23/11	MNTVK1FK
Dilution Factor: 1									
Uranium									
	0.50	105	110	mg/kg	104		SW846 6020	11/11-11/23/11	MNTVK1FT
	0.50	105	112	mg/kg	106	1.8	SW846 6020	11/11-11/23/11	MNTVK1FU
Dilution Factor: 1									

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1204
 Date Sampled...: 11/04/11

Date Received...: 11/08/11

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Vanadium	93.2	105	189	mg/kg	90		SW846 6020	11/11-11/23/11	MNTVK1FL
	93.2	105	192	mg/kg	93	1.6	SW846 6020	11/11-11/23/11	MNTVK1FM
Dilution Factor: 1									

Zinc	67.2	105	158	mg/kg	86		SW846 6020	11/11-11/23/11	MNTVK1FN
	67.2	105	156	mg/kg	84	1.2	SW846 6020	11/11-11/23/11	MNTVK1FP
Dilution Factor: 1									

MS Lot-Sample #: F1K080484-001 Prep Batch #...: 1314044

% Moisture.....: 5.1

Antimony	0.92	52.7	50.2	mg/kg	93		SW846 6020	11/15-11/18/11	MNTVK1CM
	0.92	52.7	49.5	mg/kg	92	1.4	SW846 6020	11/15-11/18/11	MNTVK1CN
Dilution Factor: 1									

MS Lot-Sample #: F1K080484-001 Prep Batch #...: 1314048

% Moisture.....: 5.1

Mercury	ND	0.167	0.169	mg/kg	101		SW846 7471A	11/11/11	MNTVK1CP
	ND	0.167	0.169	mg/kg	101	0.12	SW846 7471A	11/11/11	MNTVK1CQ
Dilution Factor: 1									

NOTE(S) :

- Calculations are performed before rounding to avoid round-off errors in calculated results.
- N Spiked analyte recovery is outside stated control limits.
- Results and reporting limits have been adjusted for dry weight.
- D Result was obtained from the analysis of a dilution.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K180000-026 Prep Batch #...: 1322026						
Arsenic	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AA
		Dilution Factor: 1				
Barium	ND	2.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AC
		Dilution Factor: 1				
Beryllium	ND	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AD
		Dilution Factor: 1				
Boron	ND	10.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AE
		Dilution Factor: 1				
Cadmium	ND	0.050	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AV
		Dilution Factor: 1				
Cobalt	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AG
		Dilution Factor: 1				
Copper	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AH
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AJ
		Dilution Factor: 1				
Manganese	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AK
		Dilution Factor: 1				
Molybdenum	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AL
		Dilution Factor: 1				
Nickel	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AM
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AN
		Dilution Factor: 1				
Silver	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AP
		Dilution Factor: 1				
Strontium	ND	0.50	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AQ
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Tin	ND	0.20	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AR
		Dilution Factor: 1				
Uranium	ND	0.10	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AW
		Dilution Factor: 1				
Vanadium	ND	1.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AT
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6020	11/18-12/07/11	MN4KH1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1K180000-027 Prep Batch #...: 1322027

Antimony	ND	0.50	mg/kg	SW846 6020	11/19-12/07/11	MN4KK1AA
		Dilution Factor: 1				

MB Lot-Sample #: F1K220000-013 Prep Batch #...: 1326013

Mercury	ND	0.033	mg/kg	SW846 7471A	11/22-11/29/11	MN61W1AA
		Dilution Factor: 1				

NOTE(S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>	
LCS Lot-Sample#: F1K180000-026 Prep Batch #...: 1322026								
Arsenic	109	116	mg/kg	107	SW846 6020	11/18-12/07/11	MN4KH1AX	
			Dilution Factor: 2.5					
Barium	325	337	mg/kg	104	SW846 6020	11/18-12/07/11	MN4KH1A0	
			Dilution Factor: 2.5					
Beryllium	92.0	90.0	mg/kg	98	SW846 6020	11/18-12/07/11	MN4KH1A1	
			Dilution Factor: 2.5					
Boron	142	160	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1A2	
			Dilution Factor: 2.5					
Cadmium	110	114	mg/kg	103	SW846 6020	11/18-12/07/11	MN4KH1A3	
			Dilution Factor: 2.5					
Cobalt	133	152	mg/kg	114	SW846 6020	11/18-12/07/11	MN4KH1A4	
			Dilution Factor: 2.5					
Copper	74.7	78.0	mg/kg	104	SW846 6020	11/18-12/07/11	MN4KH1A5	
			Dilution Factor: 2.5					
Lead	152	163	mg/kg	107	SW846 6020	11/18-12/07/11	MN4KH1A6	
			Dilution Factor: 2.5					
Manganese	443	496	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1A7	
			Dilution Factor: 2.5					
Molybdenum	82.5	90.7	mg/kg	110	SW846 6020	11/18-12/07/11	MN4KH1A8	
			Dilution Factor: 2.5					
Nickel	109	122	mg/kg	111	SW846 6020	11/18-12/07/11	MN4KH1A9	
			Dilution Factor: 2.5					
Selenium	207	241	mg/kg	116	SW846 6020	11/18-12/07/11	MN4KH1CA	
			Dilution Factor: 2.5					
Silver	52.0	52.5	mg/kg	101	SW846 6020	11/18-12/07/11	MN4KH1CC	
			Dilution Factor: 2.5					
Strontium	111	121	mg/kg	109	SW846 6020	11/18-12/07/11	MN4KH1CD	
			Dilution Factor: 2.5					

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #	
Tin	135	132	mg/kg	98	SW846 6020	11/18-12/07/11	MN4KH1CE	
			Dilution Factor: 2.5					
Vanadium	110	119	mg/kg	108	SW846 6020	11/18-12/07/11	MN4KH1CF	
			Dilution Factor: 2.5					
Zinc	299	334	mg/kg	112	SW846 6020	11/18-12/07/11	MN4KH1CG	
			Dilution Factor: 2.5					
Chromium	93.4	96.1	mg/kg	103	SW846 6020	11/18-12/07/11	MN4KH1CH	
			Dilution Factor: 2.5					
Uranium	100	105	mg/kg	105	SW846 6020	11/18-12/07/11	MN4KH1CJ	
			Dilution Factor: 1					
LCS Lot-Sample#: F1K180000-027 Prep Batch #... : 1322027								
Antimony	50.0	48.1	mg/kg	96	SW846 6020	11/19-12/07/11	MN4KK1AC	
			Dilution Factor: 1					
LCS Lot-Sample#: F1K220000-013 Prep Batch #... : 1326013								
Mercury	16.3	20.7	mg/kg	127	SW846 7471A	11/22-11/29/11	MN61W1AC	
			Dilution Factor: 50					

NOTE(S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1219
 Date Sampled...: 11/08/11

Date Received...: 11/16/11

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1322026

% Moisture.....: 3.6

Arsenic

1.9	104	93.8	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1CP
1.9	104	93.3	mg/kg	88	0.52	SW846 6020	11/18-12/07/11	MN3CC1CQ

Dilution Factor: 1

Barium

74.0	104	182	mg/kg	104		SW846 6020	11/18-12/07/11	MN3CC1CR
74.0	104	180	mg/kg	102	1.2	SW846 6020	11/18-12/07/11	MN3CC1CT

Dilution Factor: 1

Beryllium

0.28	104	111	mg/kg	107		SW846 6020	11/18-12/07/11	MN3CC1CU
0.28	104	110	mg/kg	105	1.0	SW846 6020	11/18-12/07/11	MN3CC1CV

Dilution Factor: 1

Boron

6.6	104	119	mg/kg	109		SW846 6020	11/18-12/07/11	MN3CC1CW
6.6	104	123	mg/kg	112	3.1	SW846 6020	11/18-12/07/11	MN3CC1CX

Dilution Factor: 1

Cadmium

0.19	104	104	mg/kg	100		SW846 6020	11/18-12/07/11	MN3CC1C0
0.19	104	102	mg/kg	98	1.5	SW846 6020	11/18-12/07/11	MN3CC1C1

Dilution Factor: 1

Chromium

4.2	104	87.9	mg/kg	81		SW846 6020	11/18-12/07/11	MN3CC1CA
4.2	104	87.9	mg/kg	81	0.04	SW846 6020	11/18-12/07/11	MN3CC1CC

Dilution Factor: 1

Cobalt

32.2	104	120	mg/kg	84		SW846 6020	11/18-12/07/11	MN3CC1C2
32.2	104	116	mg/kg	81	3.4	SW846 6020	11/18-12/07/11	MN3CC1C3

Dilution Factor: 1

Copper

16.7	104	111	mg/kg	91		SW846 6020	11/18-12/07/11	MN3CC1C4
16.7	104	109	mg/kg	88	2.3	SW846 6020	11/18-12/07/11	MN3CC1C5

Dilution Factor: 1

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Lead									
	3.7	104	105	mg/kg	97		SW846 6020	11/18-12/07/11	MN3CC1C6
	3.7	104	107	mg/kg	99	2.1	SW846 6020	11/18-12/07/11	MN3CC1C7
Dilution Factor: 1									
Manganese									
	479	104	601	mg/kg	118		SW846 6020	11/18-12/07/11	MN3CC1C8
	479	104	594	mg/kg	111	1.2	SW846 6020	11/18-12/07/11	MN3CC1C9
Dilution Factor: 1									
Molybdenum									
	0.54	104	93.2	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1DA
	0.54	104	93.4	mg/kg	89	0.18	SW846 6020	11/18-12/07/11	MN3CC1DC
Dilution Factor: 1									
Nickel									
	7.1	104	104	mg/kg	93		SW846 6020	11/18-12/07/11	MN3CC1DD
	7.1	104	102	mg/kg	91	2.2	SW846 6020	11/18-12/07/11	MN3CC1DE
Dilution Factor: 1									
Selenium									
	2.0	104	93.6	mg/kg	88		SW846 6020	11/18-12/07/11	MN3CC1DF
	2.0	104	91.3	mg/kg	86	2.4	SW846 6020	11/18-12/07/11	MN3CC1DG
Dilution Factor: 1									
Silver									
	2.8	10.4	12.0	mg/kg	89		SW846 6020	11/18-12/07/11	MN3CC1DH
	2.8	10.4	12.0	mg/kg	89	0.37	SW846 6020	11/18-12/07/11	MN3CC1DJ
Dilution Factor: 1									
Strontium									
	30.9	104	140	mg/kg	106		SW846 6020	11/18-12/07/11	MN3CC1DK
	30.9	104	134	mg/kg	99	4.8	SW846 6020	11/18-12/07/11	MN3CC1DL
Dilution Factor: 1									
Tin									
	0.84	104	100	mg/kg	96		SW846 6020	11/18-12/07/11	MN3CC1DM
	0.84	104	101	mg/kg	97	0.73	SW846 6020	11/18-12/07/11	MN3CC1DN
Dilution Factor: 1									
Uranium									
	0.45	104	108	mg/kg	103		SW846 6020	11/18-12/07/11	MN3CC1CD
	0.45	104	111	mg/kg	106	2.6	SW846 6020	11/18-12/07/11	MN3CC1CE
Dilution Factor: 1									

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: SL1219

Matrix.....: SOLID

Date Sampled...: 11/08/11

Date Received...: 11/16/11

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Vanadium	96.1	104	184	mg/kg	85		SW846 6020	11/18-12/07/11	MN3CC1A6
	96.1	104	187	mg/kg	87	1.3	SW846 6020	11/18-12/07/11	MN3CC1A7
			Dilution Factor: 1						
Zinc	61.6	104	157	mg/kg	92		SW846 6020	11/18-12/07/11	MN3CC1A8
	61.6	104	153	mg/kg	88	2.7	SW846 6020	11/18-12/07/11	MN3CC1A9
			Dilution Factor: 1						

MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1322027

% Moisture.....: 3.6

Antimony	0.24	51.9	49.2	mg/kg	94		SW846 6020	11/19-12/07/11	MN3CC1CF
	0.24	51.9	49.6	mg/kg	95	0.76	SW846 6020	11/19-12/07/11	MN3CC1CG
			Dilution Factor: 1						

MS Lot-Sample #: F1K160470-001 Prep Batch #...: 1326013

% Moisture.....: 3.6

Mercury	ND	0.167	0.195	mg/kg	117		SW846 7471A	11/22-11/29/11	MN3CC1CH
	ND	0.167	0.202	N mg/kg	121	3.2	SW846 7471A	11/22-11/29/11	MN3CC1CJ
			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.

N Spiked analyte recovery is outside stated control limits.

Batch QC List**Group #** WSCF113438**Attention** Scot Fitzgerald
Department Inorganic

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
192503	192544	4	BLANK	66148	BLANK		ICP-2008 MS All possible metal
192503	192544	5	LCS	66149	LCS		ICP-2008 MS All possible metal
192503	192544	7	MS	66150	B2JPD6(113429001MS)	113429001	ICP-2008 MS All possible metal
192503	192544	8	MSD	66151	B2JPD6(113429001MSD)	113429001	ICP-2008 MS All possible metal
192503	192544	15	SAMPLE	113438001	B2H166		ICP-2008 MS All possible metal
192813	192814	1	BLANK	67029	BLANK		Anions by Ion Chromatography (Solid)
192813	192814	3	LCS	67030	LCS		Anions by Ion Chromatography (Solid)
192813	192814	4	MS	67031	B2JPF4(113476001MS)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	5	MSD	67032	B2JPF4(113476001MSD)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	6	DUP	67033	B2JPF4(113476001DUP)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	11	SAMPLE	113438001	B2H166		Anions by Ion Chromatography (Solid)

Quality Control Report

Attention Scot Fitzgerald **Group #** WSCF113438
Department Inorganic

QC Batch	192503	Test	ICP-2008 MS All possible metal
Associated Samples	113438001		

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
QC Sample #66148										
Manganese	7439-96-5	<0.10	<0.10	ug/L					U	12/13/11
Nickel	7440-02-0	<0.10	<0.10	ug/L					U	12/13/11
Silver	7440-22-4	<0.050	<0.050	ug/L					U	12/13/11
Antimony	7440-36-0	<0.30	<0.30	ug/L					U	12/13/11
Barium	7440-39-3	<0.20	<0.20	ug/L					U	12/13/11
Beryllium	7440-41-7	<0.10	<0.10	ug/L					U	12/13/11
Cadmium	7440-43-9	<0.050	<0.050	ug/L					U	12/13/11
Chromium	7440-47-3	<0.10	<0.10	ug/L					U	12/13/11
Cobalt	7440-48-4	<0.050	<0.050	ug/L					U	12/13/11
Copper	7440-50-8	<0.10	<0.10	ug/L					U	12/13/11
Vanadium	7440-62-2	0.614	0.614	ug/L					B	12/13/11
Zinc	7440-66-6	<1.0	<1.0	ug/L					U	12/13/11
Lead	7439-92-1	<0.050	<0.050	ug/L					U	12/13/11
Mercury	7439-97-6	<0.050	<0.050	ug/L					U	12/13/11
Molybdenum	7439-98-7	<0.050	<0.050	ug/L					U	12/13/11
Strontium	7440-24-6	<0.10	<0.10	ug/L					U	12/13/11
Tin	7440-31-5	<0.050	<0.050	ug/L					U	12/13/11
Uranium	7440-61-1	<0.050	<0.050	ug/L					U	12/13/11
Arsenic	7440-38-2	<0.20	<0.20	ug/L					U	12/13/11

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic
 Group # WSCF113438

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Selenium	7782-49-2	<1.0		ug/L					U	12/13/11
LCS				QC Sample #66149						
Manganese	7439-96-5	256		mg/kg	89.4	75 - 121				12/13/11
Nickel	7440-02-0	52.3		mg/kg	88.5	74 - 122				12/13/11
Silver	7440-22-4	33.2		mg/kg	96.5	83 - 127				12/13/11
Antimony	7440-36-0	159		mg/kg	130.1	62 - 205				12/13/11
Barium	7440-39-3	160		mg/kg	94.5	78 - 118				12/13/11
Beryllium	7440-41-7	57.5		mg/kg	92.1	77 - 120				12/13/11
Cadmium	7440-43-9	56.9		mg/kg	92	76 - 129				12/13/11
Chromium	7440-47-3	65.0		mg/kg	91.2	68 - 119				12/13/11
Cobalt	7440-48-4	96.0		mg/kg	93.2	77 - 122				12/13/11
Copper	7440-50-8	68.8		mg/kg	84.7	67 - 120				12/13/11
Vanadium	7440-62-2	55.3		mg/kg	93.4	67 - 122				12/13/11
Zinc	7440-66-6	125		mg/kg	88.9	73 - 131				12/13/11
Lead	7439-92-1	87.0		mg/kg	94.1	79 - 124				12/13/11
Mercury	7439-97-6	3.58		mg/kg	95.1	69 - 124				12/13/11
Molybdenum	7439-98-7	43.2		mg/kg	101.4	80 - 125				12/13/11
Strontium	7440-24-6	64.6		mg/kg	89.2	78 - 119				12/13/11
Tin	7440-31-5	110		mg/kg	102.5	84 - 130				12/13/11
Uranium	7440-61-1	351		mg/kg	91.4	86 - 113				12/13/11
Arsenic	7440-38-2	91.2		mg/kg	98.4	79 - 125				12/13/11
Selenium	7782-49-2	85.8		mg/kg	95.9	82 - 133				12/13/11
MS				QC Sample #66150						
				Original 113429001						

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic
 Group # WSCF113438

Analyte	CAS #	Original Found	QC Found	Units	% RecovLimits	RPD	RPD Limit	RQ	Analyzed
Manganese	7439-96-5	99.2		mg/kg	100.4	70 - 130			12/13/11
Nickel	7440-02-0	84.9		mg/kg	86	70 - 130			12/13/11
Silver	7440-22-4	94.1		mg/kg	95.2	70 - 130			12/13/11
Antimony	7440-36-0	86.5		mg/kg	87.5	70 - 130			12/13/11
Barium	7440-39-3	100		mg/kg	101.3	70 - 130			12/13/11
Beryllium	7440-41-7	87.9		mg/kg	89	70 - 130			12/13/11
Cadmium	7440-43-9	90.4		mg/kg	91.5	70 - 130			12/13/11
Chromium	7440-47-3	88.0		mg/kg	89	70 - 130			12/13/11
Cobalt	7440-48-4	87.0		mg/kg	88.1	70 - 130			12/13/11
Copper	7440-50-8	84.4		mg/kg	85.4	70 - 130			12/13/11
Vanadium	7440-62-2	86.4		mg/kg	87.5	70 - 130			12/13/11
Zinc	7440-66-6	88.2		mg/kg	89.3	70 - 130			12/13/11
Lead	7439-92-1	89.5		mg/kg	90.6	70 - 130			12/13/11
Mercury	7439-97-6	1.93		mg/kg	97.5	70 - 130			12/13/11
Molybdenum	7439-98-7	97.1		mg/kg	98.3	70 - 130			12/13/11
Strontium	7440-24-6	97.5		mg/kg	98.6	70 - 130			12/13/11
Tin	7440-31-5	92.1		mg/kg	93.2	70 - 130			12/13/11
Uranium	7440-61-1	93.7		mg/kg	94.8	70 - 130			12/13/11
Arsenic	7440-38-2	91.0		mg/kg	92.1	70 - 130			12/13/11
Selenium	7782-49-2	91.1		mg/kg	92.2	70 - 130			12/13/11
MSD									
				QC Sample #66151					
				Original 113429001				Paired 66150	
Manganese	7439-96-5	121		mg/kg	122	70 - 130	19.40	30	12/13/11
Nickel	7440-02-0	91.0		mg/kg	91.8	70 - 130	6.50	30	12/13/11
Silver	7440-22-4	94.2		mg/kg	95.1	70 - 130	0.10	30	12/13/11

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF113438

Analyte	CAS #	Original Found	QC Found	Units	% RecovLimits	RPD	RPD Limit	RQ	Analyzed
Antimony	7440-36-0	88.9		mg/kg	89.7	70 - 130	2.50	30	12/13/11
Barium	7440-39-3	104		mg/kg	104.6	70 - 130	3.20	30	12/13/11
Beryllium	7440-41-7	94.2		mg/kg	95.1	70 - 130	6.60	30	12/13/11
Cadmium	7440-43-9	93.1		mg/kg	93.9	70 - 130	2.60	30	12/13/11
Chromium	7440-47-3	91.1		mg/kg	92	70 - 130	3.30	30	12/13/11
Cobalt	7440-48-4	91.5		mg/kg	92.4	70 - 130	4.80	30	12/13/11
Copper	7440-50-8	88.1		mg/kg	88.9	70 - 130	4.00	30	12/13/11
Vanadium	7440-62-2	87.7		mg/kg	88.5	70 - 130	1.10	30	12/13/11
Zinc	7440-66-6	91.8		mg/kg	92.7	70 - 130	3.70	30	12/13/11
Lead	7439-92-1	92.2		mg/kg	93.1	70 - 130	2.70	30	12/13/11
Mercury	7439-97-6	1.96		mg/kg	99	70 - 130	1.50	30	12/13/11
Molybdenum	7439-98-7	103		mg/kg	103.6	70 - 130	5.30	30	12/13/11
Strontium	7440-24-6	99.4		mg/kg	100.3	70 - 130	1.70	30	12/13/11
Tin	7440-31-5	95.3		mg/kg	96.2	70 - 130	3.20	30	12/13/11
Uranium	7440-61-1	96.7		mg/kg	97.6	70 - 130	2.90	30	12/13/11
Arsenic	7440-38-2	92.9		mg/kg	93.8	70 - 130	1.80	30	12/13/11
Selenium	7782-49-2	91.6		mg/kg	92.5	70 - 130	0.30	30	12/13/11

Date: 31 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: General Chemistry - Sample Data Groups (SDGs) L0040, SL1204, SL1219, W06343, W06368, WSCF113437 and WSCF113438

INTRODUCTION

This memorandum presents the results of data validation for SDG L0040 prepared by Lionville Laboratory, Inc., SDGs SL1204, SL1219, W06343 and W06368 prepared by TestAmerica Laboratories, Inc. and SDGs WSCF113437 and WSCF113438 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2H1B7	12/08/11	Soil	C	300.0
B2H130	11/04/11	Soil	C	300.0
B2H132	11/04/11	Soil	C	300.0
B2H134	11/04/11	Soil	C	300.0
B2H124	11/08/11	Soil	C	300.0
B2H168	11/08/11	Soil	C	300.0
B2H170	11/08/11	Soil	C	300.0
B2H129	11/04/11	Soil	C	7196
B2H131	11/04/11	Soil	C	7196
B2H133	11/04/11	Soil	C	7196
B2H123	11/08/11	Soil	C	7196
B2H167	11/08/11	Soil	C	7196
B2H169	11/08/11	Soil	C	7196
B2H165	12/08/11	Soil	C	7196
B2H166	12/08/11	Soil	C	300.0

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5 (SAP). 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. 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 and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirements for hexavalent chromium are extraction within 30 days of sample collection. The holding time requirement for chloride and sulfate are extraction within 28 days of sample collection and analysis with 48 hours after extraction. Sample preservation requires chilling to 4 degrees Celsius.

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exception.

For SDG SL1204, the chloride laboratory blank result was > the method detection limit (MDL) but < the reporting limit (RL). All associated sample results were > the RLs and >5X the blank value and should not be qualified as a result.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable with the following exception. Chloride and sulfate were detected in equipment blank sample B2H170.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results and laboratory control sample results. According to the SAP, the matrix spike sample and laboratory control sample accuracy limits are 70% to 130%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Matrix Spike (MS) Samples

All MS recoveries were acceptable with the following exception.

For SDG WSCF113437, the MS recovery for hexavalent chromium was < the lower acceptance limit. The hexavalent chromium result for sample B2H165 was a non-detect and should be qualified as an estimate and flagged "UJ."

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate sample results, field duplicate sample results, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are $\pm 30\%$. The RPD limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits (or <5X the laboratory reporting limits for analytes not listed in the SAP) with differences <2X the required detection limits no precision infraction occurred

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split results were acceptable.

- **Detection Limits**

Reported MDLs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs were below the CRDLs.

- **Completeness**

SDGs L0040, SL1204, SL1219, W06343, W06368, WSCF113437 and WSCF113438 were 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

A minor deficiency leading to qualification of the hexavalent chromium result for sample B2H165 as an estimate was due to matrix spike infraction.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.
- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.
- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.
- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.
- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.
- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.
- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

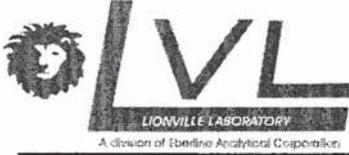
Appendix 2
Summary of Data Qualification

General Chemistry Data Qualification Summary			
SDGs: L0040, SL1204, SL1219, W06343, W06368, WSCF113437, WSCF113438	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Cr(VI)	UJ	B2H165	Low matrix spike recovery

Comments: None

Appendix 3

Annotated Laboratory Reports



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/28/2011 14:00

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
B2H1B7 (1112057-01) Soil									
%Solids	94.1	0.1	0.1	% by Weight	1	L112208	12/14/2011	12/14/2011	SM2540G
Chloride	1.1 U	1.1	5.3	mg/kg dry	1	L112386	12/28/2011	12/28/2011	EPA 300.0 (1993)
Sulfate	6.2	1.1	5.3	mg/kg dry	1	L112386	12/28/2011	12/28/2011	EPA 300.0 (1993)
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L112233	12/15/2011	12/16/2011	ISW846 7196A

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H130

General Chemistry

Lot-Sample #....: F1K080484-001 Work Order #....: MNTVK Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 % Moisture.....: 5.1

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	3.4	2.1	mg/kg	MCAWW 300.0A	11/22/11	1325224
			Dilution Factor: 1	MDL.....: 0.21		
Percent Moisture	5.1	0.10	%	MCAWW 160.3 MOD	11/12-11/13/11	1316011
			Dilution Factor: 1	MDL.....:		
Sulfate	29.0	5.3	mg/kg	MCAWW 300.0A	11/22/11	1325225
			Dilution Factor: 1	MDL.....: 0.53		

NOTE (S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H132

General Chemistry

Lot-Sample #....: F1K080484-002 Work Order #....: MNTVX Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 % Moisture.....: 6.0

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	2.7	2.1	mg/kg	MCAWW 300.0A	11/22/11	1325224
				Dilution Factor: 1	MDL.....: 0.21	
Percent Moisture	6.0	0.10	%	MCAWW 160.3 MOD	11/12-11/13/11	1316011
				Dilution Factor: 1	MDL.....:	
Sulfate	8.5	5.3	mg/kg	MCAWW 300.0A	11/22/11	1325225
				Dilution Factor: 1	MDL.....: 0.53	

NOTE (S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H134

General Chemistry

Lot-Sample #....: F1K080484-003 Work Order #....: MNTV1 Matrix.....: SOLID
 Date Sampled....: 11/04/11 Date Received...: 11/08/11
 % Moisture.....: 4.8

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	22.0	2.1	mg/kg	MCAWW 300.0A	11/22/11	1325224
				Dilution Factor: 1	MDL.....: 0.21	
Percent Moisture	4.8	0.10	%	MCAWW 160.3 MOD	11/12-11/13/11	1316011
				Dilution Factor: 1	MDL.....:	
Sulfate	609 D	52.5	mg/kg	MCAWW 300.0A	11/23/11	1327106
				Dilution Factor: 10	MDL.....: 5.2	

NOTE (S) :

RL Reporting Limit
 Results and reporting limits have been adjusted for dry weight.
 D Result was obtained from the analysis of a dilution.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H124

General Chemistry

Lot-Sample #...: F1K160470-001 Work Order #...: MN3CC Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 % Moisture.....: 3.6

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	10.5	2.1	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.21	11/23/11	1327107
Percent Moisture	3.6	0.10	%	MCAWW 160.3 MOD Dilution Factor: 1 MDL.....:	11/18-11/19/11	1322034
Sulfate	42.4	5.2	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.52	11/23/11	1327106

NOTE(S) :

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H168

General Chemistry

Lot-Sample #...: F1K160470-002 Work Order #...: MN3DA Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 % Moisture.....: 3.6

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	10.9	2.1	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.21	11/23/11	1327107
Percent Moisture	3.6	0.10	%	MCAWW 160.3 MOD Dilution Factor: 1 MDL.....:	11/18-11/19/11	1322034
Sulfate	43.1	5.2	mg/kg	MCAWW 300.0A Dilution Factor: 1 MDL.....: 0.52	11/23/11	1327106

NOTE(S) :

RL Reporting Limit
 Results and reporting limits have been adjusted for dry weight.

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H170

General Chemistry

Lot-Sample #...: F1K160470-003 Work Order #...: MN3DC Matrix.....: SOLID
 Date Sampled...: 11/08/11 Date Received...: 11/16/11
 % Moisture.....: 0.040

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	1.8 B	2.0	mg/kg	MCAWW 300.0A MDL.....: 0.20	11/23/11	1327107
				Dilution Factor: 1		
Percent Moisture	0.040 B	0.10	%	MCAWW 160.3 MOD MDL.....:	11/18-11/19/11	1322034
				Dilution Factor: 1		
Sulfate	2.5 B	5.0	mg/kg	MCAWW 300.0A MDL.....: 0.50	11/23/11	1327106
				Dilution Factor: 1		

NOTE(S):

- RL Reporting Limit
- Results and reporting limits have been adjusted for dry weight.
- B Estimated result. Result is less than RL.

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:06:00 AM

Lot-Sample No.: J1K070434-1

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H129

COC No.: F11-095-288

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRVX1AA		Report DB ID: 9MNRVX10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/7/11 02:30 p		2.505	
							1.55E-01	N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRVX1AC		Report DB ID: 9MNRVX10					
ALPHA	3.45E+00	U	3.2E+00	3.2E+00	5.35E+00	pCi/g	100%	0.64	11/13/11 10:54 a		0.0505	GPC10B
							2.14E+00	1.00E+01			g	
								(2.1)				
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRVX1AD		Report DB ID: 9MNRVX10					
BETA	1.75E+01	U	3.6E+00	4.2E+00	5.01E+00	pCi/g	100%	(3.5)	11/13/11 06:01 p		0.2001	GPC26B
							2.34E+00	1.50E+01			g	
								(8.3)				

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
 V5.2.18.1 A2002

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:24:00 AM

Lot-Sample No.: J1K070434-2

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H131

COC No.: F11-095-290

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRV01AA		Report DB ID: 9MNRV010					
HEXCHROME	5.82E-01			0.0E+00	1.55E-01	mg/kg	N/A	(3.8)	11/7/11 02:30 p		2.5011	
							1.55E-01	N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRV01AC		Report DB ID: 9MNRV010					
ALPHA	2.30E+00	U	3.2E+00	3.3E+00	6.37E+00	pCi/g	100%	0.36	11/13/11 10:54 a		0.0502	GPC10C
							2.67E+00	1.00E+01			g	
								(1.4)				
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRV01AD		Report DB ID: 9MNRV010					
BETA	1.51E+01		3.4E+00	3.9E+00	4.76E+00	pCi/g	100%	(3.2)	11/13/11 06:01 p		0.2001	GPC26C
							2.21E+00	1.50E+01			g	
								(7.7)				
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 11:35:00 AM

Lot-Sample No.: J1K070434-3

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H133

COC No.: F11-095-292

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRV11AA	Report DB ID: 9MNRV110						
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/7/11 02:30 p		2.5154	
							1.55E-01	N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRV11AC	Report DB ID: 9MNRV110						
ALPHA	4.94E+00		3.1E+00	3.3E+00	3.83E+00	pCi/g	100%	(1.3)	11/13/11 10:54 a		0.0502	GPC10A
							1.39E+00	1.00E+01			g	
								(3.)				
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRV11AD	Report DB ID: 9MNRV110						
BETA	2.33E+01		4.0E+00	5.0E+00	4.71E+00	pCi/g	100%	(5.)	11/13/11 06:01 p		0.2003	GPC28B
							2.19E+00	1.50E+01			g	
								(9.3)				

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
 V5.2.18.1 A2002

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica

SDG: W06368

Collection Date: 11/8/2011 9:44:00 AM

Lot-Sample No.: J1K150504-1

Report No. : 49738

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H123

COC No. : F11-095-364

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6				Work Order: MN2HJ1AA		Report DB ID: 9MN2HJ10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5136	
							1.55E-01	N/A			g	
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HJ1AC		Report DB ID: 9MN2HJ10					
ALPHA	2.68E+00	U	3.0E+00	1.9E+01	5.39E+00	pCi/g	100%	0.5	11/28/11 06:47 a		0.0503	GPC10C
							2.18E+00	1.00E+01			g	
								0.29				
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HJ1AD		Report DB ID: 9MN2HJ10					
BETA	1.69E+01	U	3.5E+00	3.0E+01	4.71E+00	pCi/g	100%	(3.6)	11/28/11 07:22 a		0.2003	GPC32B
							2.19E+00	1.50E+01			g	
								(1.1)				
No. of Results: 3	Comments:											

TestAmerica
rptSTLRchSample
V5.2.18.2 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica

SDG: W06368

Collection Date: 11/8/2011 9:44:00 AM

Lot-Sample No.: J1K150504-2

Report No.: 49738

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H167

COC No.: F11-095-372

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6				Work Order: MN2HM1AA		Report DB ID: 9MN2HM10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5026	
							1.55E-01	N/A			g	
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HM1AC		Report DB ID: 9MN2HM10					
ALPHA	5.33E+00	U	3.2E+00	3.7E+01	3.83E+00	pCi/g	100%	(1.4)	11/28/11 08:42 a		0.0505	GPC10A
							1.39E+00	1.00E+01			g	
								0.29				
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HM1AD		Report DB ID: 9MN2HM10					
BETA	1.51E+01	U	3.3E+00	2.8E+01	4.53E+00	pCi/g	100%	(3.3)	11/28/11 07:22 a		0.2008	GPC32C
							2.10E+00	1.50E+01			g	
								(1.1)				

No. of Results: 3

Comments:

TestAmerica
rptSTLRchSample
V5.2.18.2 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica

SDG: W06368

Collection Date: 11/8/2011 8:30:00 AM

Lot-Sample No.: J1K150504-3

Report No.: 49738

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H169

COC No.: F11-095-374

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6				Work Order: MN2HQ1AA		Report DB ID: 9MN2HQ10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5183	
							1.55E-01	N/A			g	
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HQ1AC		Report DB ID: 9MN2HQ10					
ALPHA	3.72E+00	U	2.9E+00	2.6E+01	4.10E+00	pCi/g	100%	0.91	11/28/11 08:42 a		0.0505	GPC10B
							1.51E+00	1.00E+01			g	
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HQ1AD		Report DB ID: 9MN2HQ10					
BETA	2.08E+01	U	3.7E+00	3.6E+01	4.61E+00	pCi/g	100%	(4.5)	11/28/11 08:19 a		0.2	GPC31B
							2.14E+00	1.50E+01			g	

No. of Results: 3

Comments:

TestAmerica
rptSTLRchSample
V5.2.18.2 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

WSCF Analytical Results Report

Group # WSCF113437

Attention Scot Fitzgerald
 Department Inorganic

Sample # 113437001
 SAF# F11-095
 Sample ID B2H165

Matrix SOIL
 Sampled 12/08/11
 Received 12/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										12/20/11
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UJ UN	<0.11		ug/g	1	0.11	0.53	12/20/11

MDL = Minimum Detection
 RQ = Result Qualifier
 TP Err = Total Propagated
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the PQL (or EQL) but >= the IDL/MDL (Inorganic)
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 E - Analyte is an estimate, see comment section.
 N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
 X, Y or Z - See comment detail and/or narrative.
 PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Inorganic

Sample # 113438001
SAF# F11-095
Sample ID B2H166

Matrix SOIL
Sampled 12/08/11
Received 12/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										
Anions by IC										
Chloride	16887-00-6	LA-533-410	U	<3.1		mg/kg	1	3.1	21	12/19/11
Sulfate	14808-79-8	LA-533-410	B	6.76		mg/kg	1	5.8	55	12/19/11
ICPMS Prep										
ICP-MS										
Manganese	7439-96-5	LA-505-412		299		mg/kg	1	0.10	1.0	12/13/11
Nickel	7440-02-0	LA-505-412		6.53		mg/kg	1	0.10	1.0	12/13/11
Silver	7440-22-4	LA-505-412	U	<0.052		mg/kg	1	0.052	0.52	12/13/11
Antimony	7440-36-0	LA-505-412	U	<0.31		mg/kg	1	0.31	3.1	12/13/11
Barium	7440-39-3	LA-505-412		53.0		mg/kg	1	0.21	2.1	12/13/11
Beryllium	7440-41-7	LA-505-412	B	0.248		mg/kg	1	0.10	1.0	12/13/11
Cadmium	7440-43-9	LA-505-412	B	0.0538		mg/kg	1	0.052	0.52	12/13/11
Chromium	7440-47-3	LA-505-412		3.29		mg/kg	1	0.10	1.0	12/13/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.052	0.26	12/13/11
Copper	7440-50-8	LA-505-412		16.3		mg/kg	1	0.10	1.0	12/13/11
Vanadium	7440-62-2	LA-505-412		78.5		mg/kg	1	0.21	2.1	12/13/11
Zinc	7440-66-6	LA-505-412		47.5		mg/kg	1	1.0	10	12/13/11
Lead	7439-92-1	LA-505-412		2.16		mg/kg	1	0.052	0.52	12/13/11

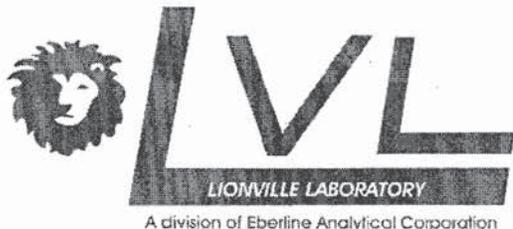
MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the PQL (or EQL) but >= the IDL/MDL (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary dilution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X, Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



264 Welsh Pool Road
 Exton, Pennsylvania 19341
 Phone (610) 280-3000
 Fax (610) 280-3041

Case Narrative

Client: CHPRC HANFORD F11-095 L0040
LVL#: 1112057

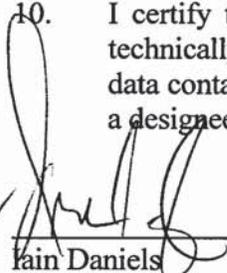
Date Received: 12-13-11

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the data summary report..

Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
5. The method blanks were within the 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 soil samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



 Rain Daniels
 Laboratory Manager
 Lionville Laboratory
 njp\i12-057

12/29/11
 Date

- CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-376	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-265		FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7978 3174 2248			
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION		Cool~4C	Cool~4C	Cool~4C	Cool~4C
		HOLDING TIME		1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours
		TYPE OF CONTAINER		aG	G/P	G/P	G/P
		NO. OF CONTAINER(S)		1	1	1	1
		VOLUME		250mL	250mL	60mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	IC Anions - 300.0 {Chloride, Sulfate};
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H1B7	SOIL	DEC 08 2011	0945	✓	✓	✓	✓

4000000000

174 of 299

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME DEC 08 2011 / 1030	RECEIVED BY/STORED IN MULLOY SSU #1	DATE/TIME DEC 08 2011 / 1030	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6010 (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010 (Supertrace Add-On) {Antimony, Beryllium, Boron, Cobalt, Copper, Manganese, Molybdenum, Nickel, Strontium, Tin, Vanadium, Zinc}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MULLOY SSU #1	DATE/TIME 12/12/11 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME 12/12/11 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME 12/12/11 1115	RECEIVED BY/STORED IN FED Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED Ex	DATE/TIME 12-13-11 / 0925	RECEIVED BY/STORED IN [Signature]	DATE/TIME 12-13-11 / 0925		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 January 25, 2012
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1204
Number of Samples	: three samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: November 8, 2011

II. Introduction

On November 8, 2011, three solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

This is a revised narrative to include discussion of Chloride detected in the method blank. Revision also includes updated data for PCB analysis to meet project required detection limit of 0.017 mg/kg.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

ICPMS Metals

Batch: 1314043

The samples were analyzed at a dilution for Boron due to the presence of matrix interferences which caused internal standard failures. The reporting limit has been adjusted for the dilution. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Cadmium and Tin were detected in the method blank at a concentration above the MDL but below the RL. The analytes were detected in the associated samples at concentrations greater than 4x the method blank result. No qualifier is required.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

The MS and/or MSD recovery for Manganese and Silver is outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. The analytes are qualified with an "N" flag.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Due to LDR failures, the LDR has been lowered for Beryllium (200ppb). The MS/MSD results were above the LDR. The LCS and MS/MSD recoveries were within acceptable QC limits. The MS/MSD results are reported as estimated values.

Affected Samples:

F1K080484 (1): B2H130

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THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

February 7, 2012_REVISED

SDG: SL1204

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Batch: 1314044

Antimony was detected in the method blank at a concentration above the MDL but below the RL. The analyte is qualified accordingly in the associated samples.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

Ion Chromatography**Batch: 1327106**

The associated sample was analyzed at dilution for Sulfate due to high concentrations of the target analyte. The reporting limit has been adjusted only for those samples reported from the dilution run. The analyte is qualified with a "D" flag.

Affected Samples:

F1K080484 (3): B2H134

Batch: 1325224

Chloride was detected in the method blank above the method detection limit but below the reporting limit. The analyte concentration in the associated samples is 5 times that detected in the method blank making qualifiers unnecessary.

Affected Samples:

F1K080484 (1): B2H130

F1K080484 (2): B2H132

F1K080484 (3): B2H134

There were no observations or nonconformances for the following methods:

Mercury

PCBs

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

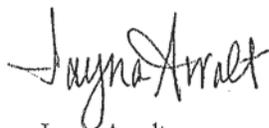
February 7, 2012_REVISED

SDG: SL1204

TestAmerica Laboratories, Inc.

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

Reviewed and approved:



Jayna Awalt
St. Louis Project Manager

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Order Number: 120124TASL-R7490

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63054

Sample Delivery Group: SL1204

Sample(s):

Method Name: 8082_PCB_GC

Sample #:	B2H130	Sample Date:	11/4/11 10:06 am	SAF #:	F11-095
Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)	
F1K080484001	1/24/2012 10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1260	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484001	1/24/2012 10:11 am	Aroclor-1254	REANALYZE	15 Days / 15 Days	
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					

Deliver Report Results to: CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, WA 99352-1234
C/O Mr. Mike Neely

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Sample #: B2H132 Sample Date: 11/4/11 10:24 am SAF #: F11-095
 Lab Sample ID RDR Action Start Date Constituent Action TAT (Hardcopy/EDD)
 F1K080484002 1/24/2012 10:11 am Aroclor-1248 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1016 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1242 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1221 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1232 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1260 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484002 1/24/2012 10:11 am Aroclor-1254 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

Sample #: B2H134 Sample Date: 11/4/11 11:35 am SAF #: F11-095
 Lab Sample ID RDR Action Start Date Constituent Action TAT (Hardcopy/EDD)
 F1K080484003 1/24/2012 10:11 am Aroclor-1254 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

F1K080484003 1/24/2012 10:11 am Aroclor-1260 REANALYZE 15 Days / 15 Days
 Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF
 01/24/2012

Deliver Report Results to: CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Richland, WA 99352-1234
 C/O Mr. Mike Neely

RECHECK, RECOUNT, OR REANALYSIS ORDER

01/24/2012

Sample #: B2H134 Sample Date: 11/4/11 11:35 am SAF #: F11-095

Lab Sample ID	RDR Action	Start Date	Constituent	Action	TAT (Hardcopy/EDD)
F1K080484003	1/24/2012	10:11 am	Aroclor-1016	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1221	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1248	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1242	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF 01/24/2012					
F1K080484003	1/24/2012	10:11 am	Aroclor-1232	REANALYZE	15 Days / 15 Days
Special Instructions: Minimum detection limit of 0.017 mg/kg required for this project. Please rerun at sample size/dilution needed to meet this requirement. SLF					

01/24/2012

LAB RESPONSE: SAMPLES WERE RE-ANALYZED TO MEET LIMITS OF 0.017 MG/KG. DATA HAS BEEN RE-SUBMITTED AND NARRATIVE REVISED. JKA 2/7/12

Deliver Report Results to: CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, WA 99352-1234
C/O Mr. Mike Neely

Problem and Discrepancy Report

TASL

SDG SL1204

1. The data package has the following issues:

- a) The results for the following constituents are stuck in staged results due to the electronic results having a J qualifier associated with them. The J qualifier does not appear in the hard copy data package and the qualifier is not appropriate for inorganic analyses. Samples affected are B2H130, B2H132, and B2H134. The J qualifier should be removed.
- b) The antimony results in the hard copy data package for sample B2H130 and B2H132 are C qualified. The C qualifier should be added to the electronic results.

Resolution: *Provide appropriate correction.*

Lab Response: J qualifiers removed from Chloride data in EDD and hardcopy report. Blank contamination discussed in narrative. C flag is updated for Antimony in EDD.

Please correct the issues and resubmit the electronic data package.

SL1204

CH2M Hill Plateau Remediation Company				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-289		PAGE 1 OF 1		
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C		DATA TURNAROUND 15 Days / 15 Days		
SAMPLING LOCATION 183.7KE Soil Sample 2 183.2KE Pothole 1 Soil Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>		METHOD OF SHIPMENT FEDERAL EXPRESS		
ICE CHEST NO. CWS-246		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'		COA 3022502510 302472510 10/27/11		BILL OF LADING/AIR BILL NO. 7977 1119 3888		ORIGINAL		
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				SEE PTR						
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C	Cool~4C				
				HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours				
				TYPE OF CONTAINER		aG	G/P	G/P				
				NO. OF CONTAINER(S)		1	1	1				
				VOLUME		250mL	250mL	60mL				
		SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};				
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME						
B2H130		SOIL		NOV 04 2011		1006						

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLIC9SSU#1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN CHPRC	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN ABrunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1204 REVISED

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TestAmerica - St. Louis

SL1204

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-291	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION <i>183.2KE Soil Sample 3</i> 103.2KE Pothole 1 Soil Sample 2 <i>JA 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095 <i>202350 ESID</i>	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>CWS-246</i>		FIELD LOGBOOK NO. HNF-N-507- <i>24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>		COA <i>302548510</i> 302472510 <i>10/27/11</i>	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR <i>7977119 3888</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION	Cool~4C	Cool~4C	Cool~4C	<i>AW, 11/7/11</i>
			HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
			TYPE OF CONTAINER	aG	G/P	G/P	
			NO. OF CONTAINER(S)	1	1	1	
			VOLUME	250mL	250mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 {Chloride, Sulfate};	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H132	SOIL	NOV 04 2011	1024				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young <i>[Signature]</i>	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN Mollo9SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM Mollo9SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young CHPRC <i>[Signature]</i>	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN ABurson <i>[Signature]</i>	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1204 REVISED

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-293	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 2 183.2KE Pothole 1 Soil Sample 3 <i>9A 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				SAF NO. F11-095 <i>3023502510 9A 11/7/11</i>	
ICE CHEST NO. <i>6WS-246</i>		FIELD LOGBOOK NO. <i>HNF-N-507-24.1</i>		ACTUAL SAMPLE DEPTH <i>0-1'</i>		AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR				METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION Cool~4C		BILL OF LADING/AIR BILL NO. <i>SEE PTR</i> 79771193888	
		SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		<i>20 11/7/11</i>	
				SEE ITEM (1) IN SPECIAL INSTRUCTIONS		SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
				IC Anions - 300.0 (Chloride, Sulfate);			
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME	
B2H134		SOIL		NOV 04 2011		1135	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN M01109 SSU #1	DATE/TIME NOV 04 2011 / 1300	(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM M01109 SSU #1	DATE/TIME NOV 07 2011 / 1000	RECEIVED BY/STORED IN K.J. Young	DATE/TIME NOV 07 2011 / 1000		
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 07 2011 / 1030	RECEIVED BY/STORED IN CHPRC	DATE/TIME		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME	RECEIVED BY/STORED IN FED EX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN M Brunson	DATE/TIME 11/8/11 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1204 REVISED

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TestAmerica - St. Louis



THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
 P.O. Box 1600
 MS B3-60
 Richland, Washington 99352
 December 9, 2011
 Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1219
Number of Samples	: three samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: November 16, 2011

II. Introduction

On November 16, 2011, three samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-095

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. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

Deviation from Request: None

IV. Definitions

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

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** – For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** – For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** – For organic analyses, the sample is estimated and less than the RL.
- **C** – For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** – For all analyses, the sample result was obtained from the analysis of a dilution.
- **N** – For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** – For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.

PCB

Batch: 1322140

The CCV recovery was outside the lower QC limit of greater than 20% D for Aroclor 1260 and DCB indicating a potential low bias for these analytes in the samples associated with this CCV. Samples were re-analyzed with similar CCV failure indicating matrix interference present in the samples. Original results are reported.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

ICPMS Metals

Batch: 1322026

The ICV recovery was outside the upper QC limit (greater than 110%) for boron indicating a potential high bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

Due to LDR failures, the LDR has been lowered for beryllium (200ppb) and boron (400ppb). The MS/MSD's were above the LDR. The LCS and MS/MSD's were within acceptable QC limits. The MS/MSD's are reported as estimated values.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

F1K160470 (3): B2H170

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

December 9, 2011

SDG: SL1219

TestAmerica Laboratories, Inc.

Mercury**Batch: 1326013**

The MSD recovery for mercury is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery. This analyte has been qualified accordingly with an "N" flag in the associated samples.

Affected Samples:

F1K160470 (1): B2H124

F1K160470 (2): B2H168

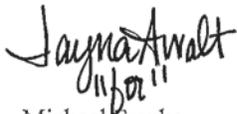
F1K160470 (3): B2H170

There were no observations or nonconformances for the following methods:

Chloride and Sulfate by IC

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

Reviewed and approved:



Michael Franks

St. Louis Project Manager

CH2MHill Plateau Remediation Company *SL1219* *CH2M 1174* CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST F11-095-365 PAGE 1 OF 1

COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 1	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil	SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS ORIGINAL	
ICE CHEST NO. 6WS-254	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	BILL OF LADING/AIR BILL NO. SEE PTR 7934-0995-4105	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. SEE PTR				

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours
		TYPE OF CONTAINER	aG	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1
		VOLUME	250mL	250mL	60mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS SEE ITEM (2) IN SPECIAL INSTRUCTIONS IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H124	SOIL	NOV 08 2011	0944	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLOA SSV #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MOLLOA SSV #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN FedEx	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN Aburson Angela	DATE/TIME 0950		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

SDG #SL1219

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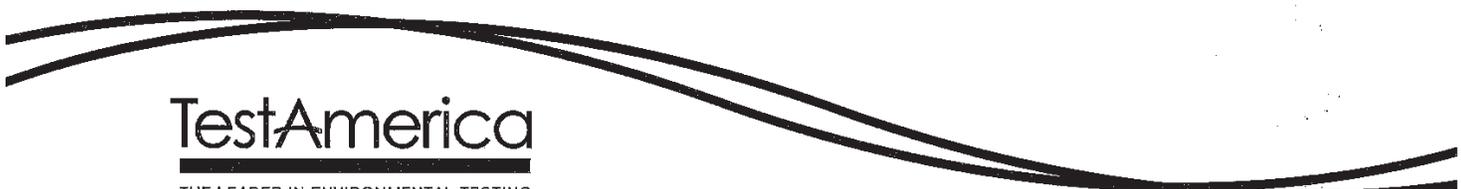
TestAmerica - St. Louis

CH2M Hill Plateau Remediation Company <i>SL1219</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-373	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KE Soil Sample 5	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>GWS-254</i>	FIELD LOGBOOK NO. <i>HNF-N-507.24.1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>		COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-#105</i>			
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C		
HOLDING TIME		1 yr/1 yr	6 Months	28 Days/48 Hours			
TYPE OF CONTAINER		aG	G/P	G/P			
NO. OF CONTAINER(S)		1	1	1			
VOLUME		250mL	250mL	60mL			
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H168	SOIL	NOV 08 2011	0944	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN <i>Molloy</i>	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM <i>Molloy</i>	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN <i>K.J. Young</i>	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM <i>K.J. Young</i>	DATE/TIME NOV 15 2011 / 1310	RECEIVED BY/STORED IN <i>FedEx</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	DATE/TIME	RECEIVED BY/STORED IN <i>ABrunser</i>	DATE/TIME NOV 16 2011 / 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2M Hill Plateau Remediation Company <i>SL1219</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-375	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>6WS-254</i>		FIELD LOGBOOK NO. <i>HNF-N507-24-1</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <i>7954-0995-4105</i>		
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	
		TYPE OF CONTAINER	aG	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	
		VOLUME	250mL	250mL	60mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride, Sulfate);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H170	SOIL	NOV 08 2011	0830	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN MOLLO9SSU #1	DATE/TIME NOV 08 2011 / 1045	Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP Metals - 6020 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP Metals - 6020 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; Mercury - 7471 - (CV);	
RELINQUISHED BY/REMOVED FROM MOLLO9SSU #1	DATE/TIME NOV 15 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1316	RECEIVED BY/STORED IN FED Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME	RECEIVED BY/STORED IN Molson	DATE/TIME 11/16/10950		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Mail Stop – R3-60
 Richland, WA 99352

December 05, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 7, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06343
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 7, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H129	MNRVX	SOIL	11/7/11
B2H131	MNRV0	SOIL	11/7/11
B2H133	MNRV1	SOIL	11/7/11

II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

III. 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.

CH2M Hill Plateau Remediation Company
December 05, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes 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.

QC and sample results are reported in the same units.

V. Comments

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H129) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H131) results are within contractual requirements.

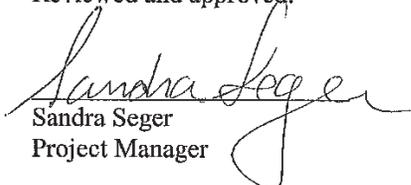
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H129) and sample matrix spike 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:


Sandra Seger
Project Manager

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-288	PAGE 1 OF 1		
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ			
SAMPLING LOCATION 183.7KE Soil Sample #2 183.2KE Pothole 1 Soil Sample #1 9/11/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095 30250ES10 302472ES10 10/27/11		PRICE CODE 8C AIR QUALITY <input type="checkbox"/> METHOD OF SHIPMENT GOVERNMENT VEHICLE			
ICE CHEST NO. 6WS-017		FIELD LOGBOOK NO. HNF-N-507-24		ACTUAL SAMPLE DEPTH 0-1'		DATA TURNAROUND 15 Days / 15 Days ORIGINAL			
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A					
MATRIX* A=Air DL=Drum L=Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION None Cool/C		None		SDG#W06343 LOT#J1K070434 Report: 11/22/11 RW 11/18/11			
		HOLDING TIME		30 Days				6 Months	
		TYPE OF CONTAINER		G/P				G/P	
		NO. OF CONTAINER(S)		1				1	
		VOLUME		60mL				120mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;		SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
B2H129	SOIL MVRVX	NOV 0 4 2011	1006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				



CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 0 4 2011 / 1300	RECEIVED BY/STORED IN Mollo9 SSU #1	DATE/TIME NOV 0 4 2011 / 1300	SPECIAL INSTRUCTIONS Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM Mollo9 SSU #1	DATE/TIME NOV 0 7 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 0 7 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 0 7 2011 / 1345	RECEIVED BY/STORED IN Stacked box	DATE/TIME NOV 0 7 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-290	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 3 183.2KE Pothole 1 Soil Sample 2 JH 11/7/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-017		FIELD LOGBOOK NO. HNF-N-807-24	ACTUAL SAMPLE DEPTH 0-1'		COA 1025462610 302350 ESJC 10/27/11	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION None Cool 4C	None	SDG# WD 4343 LOT# JIKO 70434		
		HOLDING TIME	30 Days	6 Months			
		TYPE OF CONTAINER	G/P	G/P			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	60mL	120mL			
		SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H131	SOIL MNRVD	NOV 04 2011	1024	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLLO9 SSW #1	DATE/TIME NOV 04 2011 / 1300	Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLO9 SSW	DATE/TIME NOV 07 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1345	RECEIVED BY/STORED IN J Beck / Beck	DATE/TIME NOV 07 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY			TITLE	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD			DISPOSED BY	
				DATE/TIME	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-292	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 8 183.2KE Pothole 1 Soil Sample 3 <i>JA 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. 6US-017		FIELD LOGBOOK NO. MNF-N507-24	ACTUAL SAMPLE DEPTH 0-1'	COA 3025468510 3023508510 <i>10/27/11</i>	METHOD OF SHIPMENT GOVERNMENT VEHICLE		ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquid DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	None	SIDE # 206313 LOT # JIK070134			
		HOLDING TIME	30 Days				6 Months
		TYPE OF CONTAINER	G/P				G/P
		NO. OF CONTAINER(S)	1				1
		VOLUME	60mL				120mL
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H133	SOIL <i>MNRV1</i>	NOV 04 2011	1135	✓	✓		

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLLO9 SSU #1	DATE/TIME NOV 04 2011 / 1300	Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLO9 SSU #1	DATE/TIME NOV 07 2011 / 1200	RECEIVED BY/STORED IN CHPRC	DATE/TIME NOV 07 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1345	RECEIVED BY/STORED IN S. Beck	DATE/TIME NOV 07 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

December 8, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 15, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06368
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 15, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H123	MN2HJ	SOIL	11/15/11
B2H167	MN2HM	SOIL	11/15/11
B2H169	MN2HQ	SOIL	11/15/11

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. 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.

CH2M Hill Plateau Remediation Company
December 8, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes 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.

QC and sample results are reported in the same units.

V. Comments

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H123) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H167) results are within contractual requirements.

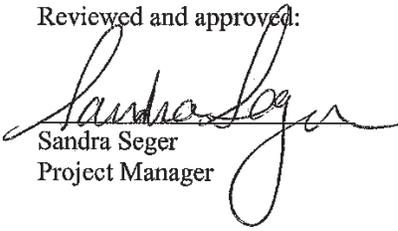
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H123) and sample matrix spike (B2H123) 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:


Sandra Seger
Project Manager

12/20/2011

Problem and Discrepancy Report

TARL**SDG W06368**

1. The data package has the following issues:

- a) Sample results, pages 8, 9, and 10, samples B2H123, B2H167, and B2H169, sample results are U qualified for 9310_ALPHABETA_GPC but are above the reporting limit.
- b) Sample results summary, page 6, hexavalent chromium, the CRDL for duplicate of sample B2H123 differs from CRDL on all other samples for hexavalent chromium. Inconsistency also on pages 8, 9, 10, and 11.

Resolution: *Provide correction.*

Lab Response: **Issue a – U qualifiers removed from results that are above the CRDL.**

Amended report and amended EDD were submitted on 2-6-12.

Issue b – The CRDL was amended on pages 6 & 11 for the Cr6 duplicate sample (B2H123 DUP). No changes are necessary on pages 8, 9 & 10 as stated above. No changes are necessary to the EDD.

Please correct the issues and resubmit the hardcopy **and** electronic data package.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-364	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	None	SDG# W06306 LOT # JTK150504 Report: 11/20/11 12/2/11 Pw/1/11		
		HOLDING TIME	30 Days	6 Months			
		TYPE OF CONTAINER	G/P	G/P			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	60mL	120mL			
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		 JTK150504		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H123	SOIL MV2HJ	NOV 08 2011	0944	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1043	RECEIVED BY/STORED IN MGI109SSU #1 K.J. Young	DATE/TIME NOV 08 2011 / 1043	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MGI109SSU #1 CHPRC	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN Lucas K... TRC	DATE/TIME NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY		TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY		DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-372	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C AIR QUALITY <input type="checkbox"/> DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 5		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. MNF-N-507.24.1		ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10		
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	None	SDG W06368 LOT JIK15050U
			HOLDING TIME		30 Days	6 Months	
			TYPE OF CONTAINER		G/P	G/P	
			NO. OF CONTAINER(S)		1	1	
			VOLUME		60mL	120mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H167 MNDHM	SOIL	NOV 08 2011	0944	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young CHPRC	NOV 08 2011 / 1045	MOLLOA SSO #1	NOV 08 2011 / 1045		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
MOLLOA SSO #1	NOV 15 2011 / 1100	K.J. Young CHPRC	NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
K.J. Young CHPRC	NOV 15 2011 / 1435	MOLLOA SSO #1	NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-374	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	None	
		HOLDING TIME	30 Days	6 Months	
		TYPE OF CONTAINER	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	60mL	120mL	
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H169	SOIL <i>MAN/2HQ</i>	NOV 08 2011	0830	✓	✓

*SDG W06368
LOT JK2H JK15D504*

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN M01109SSU #1	DATE/TIME NOV 08 2011 / 1045	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSU #1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN W06368	DATE/TIME NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Matrix Spike Post Spike and Insoluble Matrix Spike recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Attachment 2
Narrative
WSCF113437

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-370	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KE Soil Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil	SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL		
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	BILL OF LADING/AIR BILL NO. N/A		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A					
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION Cool+AC				
		HOLDING TIME 30 Days				
		TYPE OF CONTAINER G/P				
		NO. OF CONTAINER(S) 1				
		VOLUME 60mL				
		SAMPLE ANALYSIS Chromium Hex-7195				
	113437	SPECIAL HANDLING AND/OR STORAGE				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H165 /	SOIL	DEC 08 2011	0945	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME DEC 08 2011 / 1105	RECEIVED BY/STORED IN M. Nelson	DATE/TIME DEC 08 2011 / 1105	** The CACN for all analytical work at WSCF laboratory is 402114ES20. ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.	
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

PRINTED ON 12/5/2011

A-6003-618 (REV 2)

Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF113438

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Vanadium – Detected in the Blank and evaluated. No sample results in this batch were affected. “C” Flags not required.
- All other applicable QC controls are within the established limits.

Organic Comments

PCB – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gross Alpha / Gross Beta:
 - Gross Alpha – The Blank is less than two times the RDL. “B” Flag not required.
 - All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-371	PAGE 1 OF 2
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KE Soil Sample 4	PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548E510		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A				
MATRIX* A=Air DL=Drum L=Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) 113438 SPECIAL HANDLING AND/OR STORAGE	PRESERVATION	Cool-1C	Cool-1C	Cool-1C	None	
		HOLDING TIME	1 yr/1 yr	6 Months	28 Days/48 Hours	6 Months	
		TYPE OF CONTAINER	gC	gP	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	1	
		VOLUME	250mL	250mL	60mL	120mL	
	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride Substa)	SEE ITEM (3) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H166	1 SOIL	DEC 08 2011	0945	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
K.J. Young	DEC 08 2011	M. Nelson	DEC 08 2011	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME

PRINTED ON 12/5/2011

A 6002-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHILL Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-371	PAGE 2 OF 2
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5859	PROJECT COORDINATOR TRENT, SJ	PRICE CODE BC	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KF Soil Sample 4	PROJECT DESIGNATION 183 KF/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	ORIGINAL	
ICE CHEST NO. 6WS-107	FIELD LOGBOOK NO. HNF-N507-211	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE		
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A				
<p>SPECIAL INSTRUCTIONS</p> <p>** The CACN for all analytical work at WSCF laboratory is 402114ES20. ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. Th-232 will only be analyzed if gross alpha comes back high</p> <p>(1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; (3) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};</p>						
<p>PRINTED ON 12/5/2011</p> <p style="text-align: right;">A-6003-618 (REV 2)</p>						

Tuesday, December 13, 2011 10:32:10 AM
Page 3 of 3

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-020		
VALIDATOR: Eyda Hergenreder		LAB: Lionville Lab, TestAmerica, WSCF		DATE: 07-31-2012	
			SDG: L0040, SL1204, SL1219, W06343, W06368, WSCF113437, WSCF113438		
ANALYSES PERFORMED					
Anions/IC X	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI X	pH	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate	Cyanide	
SAMPLES/MATRIX Soil samples SDG L0040: B2H1B7 SDG SL1204: B2H130, B2H132, B2H134 SDG SL1219: B2H124, B2H168, B2H170 SDG W06343: B2H129, B2H131, B2H133 SDG W06368: B2H123, B2H167, B2H169 SDG WSCF113437: B2H165 SDG WSCF113438: B2H166					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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
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:

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:

SDG SL1204: MB Cl 0.39 mg/kg

EB sample B2H170: Cl 1.8 mg/kg; SO4 2.5 mg/kg

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

Spike samples analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike standards NIST traceable? (Levels D, E) Yes No N/A

Spike 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:

SDG WSCF113437: Hexavalent Cr MS 62%

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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: None

6. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A

Sample holding times acceptable? Yes No N/A

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

Results 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: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments (attach additional sheets as necessary):

More

Appendix 6

Additional Documentation Requested By Client



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/28/2011 14:00

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112208 - % Solids										
Duplicate (L112208-DUP2)		Source: 1112057-01		Prepared & Analyzed: 12/14/2011						
%Solids	93.6	0.1	0.1	% by Weight		94.1			0.6	20
Batch L112233 - SW 3060A										
Blank (L112233-BLK1)		Prepared: 12/15/2011 Analyzed: 12/16/2011								
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L112233-BS1)		Prepared: 12/15/2011 Analyzed: 12/16/2011								
Hexavalent Chromium	3.39	0.20	0.50	mg/kg wet	4.0000		85	80-120		
LCS (L112233-BS2)		Prepared: 12/15/2011 Analyzed: 12/16/2011								
Hexavalent Chromium	870	20.0	50.0	mg/kg wet	1081.9		80	80-120		
Duplicate (L112233-DUP2)		Source: 1112057-01		Prepared: 12/15/2011 Analyzed: 12/16/2011						
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry		0.21 U				20
Matrix Spike (L112233-MS3)		Source: 1112057-01		Prepared: 12/15/2011 Analyzed: 12/16/2011						
Hexavalent Chromium	3.76	0.21	0.53	mg/kg dry	4.2506	0.21 U	88	75-125		
Matrix Spike (L112233-MS4)		Source: 1112057-01		Prepared: 12/15/2011 Analyzed: 12/16/2011						
Hexavalent Chromium	932	21.3	53.1	mg/kg dry	1149.7	0.21 U	81	75-125		
Batch L112386 - Default Prep GenChem										
Blank (L112386-BLK1)		Prepared & Analyzed: 12/28/2011								
Chloride	1.0 U	1.0	5.0	mg/kg wet						
Sulfate	1.0 U	1.0	5.0	mg/kg wet						

000000011



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford
 PO Box 1600, Mail Stop - R3-60
 Richland WA, 99352

Project: F11-095
 Project Number: L0040
 Project Manager: Scot Fitzgerald

Reported:
 12/28/2011 14:00

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L112386 - Default Prep GenChem										
LCS (L112386-BS1)										
					Prepared & Analyzed: 12/28/2011					
Chloride	48.1	1.0	5.0	mg/kg wet	50.000		96.2	80-120		
Sulfate	51.5	1.0	5.0	mg/kg wet	50.000		103	80-120		
Duplicate (L112386-DUP1)										
					Source: 1112057-01		Prepared & Analyzed: 12/28/2011			
Chloride	1.1 U	1.1	5.3	mg/kg dry		1.1 U				20
Sulfate	6.3	1.1	5.3	mg/kg dry		6.2			1.94	20
Matrix Spike (L112386-MS1)										
					Source: 1112057-01		Prepared & Analyzed: 12/28/2011			
Chloride	50.6	1.1	5.3	mg/kg dry	52.538	1.1 U	96.4	75-125		
Sulfate	58.6	1.1	5.3	mg/kg dry	52.538	6.2	99.8	75-125		

METHOD BLANK REPORT

General Chemistry

Client Lot #....: SL1204

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	0.39 B	2.0	mg/kg	MCAWW 300.0A	11/22/11	1325224
		Work Order #: MN8Q91AA MB Lot-Sample #: F1K210000-224				
		Dilution Factor: 1				
Sulfate	ND	5.0	mg/kg	MCAWW 300.0A	11/22/11	1325225
		Work Order #: MN8RD1AA MB Lot-Sample #: F1K210000-225				
		Dilution Factor: 1				
Sulfate	ND	5.0	mg/kg	MCAWW 300.0A	11/23/11	1327106
		Work Order #: MPAXK1AA MB Lot-Sample #: F1K230000-106				
		Dilution Factor: 1				

NOTE (S) :

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #....: SL1204

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCNT</u> <u>RECVRY</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Chloride	20.0	19.1	mg/kg	95	MCAWW 300.0A	11/22/11	1325224
Work Order #: MN8Q91AC LCS Lot-Sample#: F1K210000-224 Dilution Factor: 1							
Sulfate	80.0	74.5	mg/kg	93	MCAWW 300.0A	11/22/11	1325225
Work Order #: MN8RD1AC LCS Lot-Sample#: F1K210000-225 Dilution Factor: 1							
Sulfate	80.0	76.6	mg/kg	96	MCAWW 300.0A	11/23/11	1327106
Work Order #: MPAXK1AC LCS Lot-Sample#: F1K230000-106 Dilution Factor: 1							

NOTE (S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #....: SL1204
 Date Sampled...: 11/04/11

Date Received...: 11/08/11

Matrix.....: SOLID

Percent Moisture: 3.6

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	3.4	21.1	22.5	mg/kg	91	MCAWW 300.0A	11/22/11	1325224
			Work Order #....: MNTVK1CU			MS Lot-Sample #: F1K080484-001		
			Dilution Factor: 1					
Sulfate	29.0	42.1	68.5	mg/kg	94	MCAWW 300.0A	11/22/11	1325225
			Work Order #....: MNTVK1CV			MS Lot-Sample #: F1K080484-001		
			Dilution Factor: 1					
Sulfate	42.4	41.5	81.4	mg/kg	94	MCAWW 300.0A	11/23/11	1327106
			Work Order #....: MN3CC1CN			MS Lot-Sample #: F1K160470-001		
			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.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #....: F1K080484

Work Order #....: MNTCQ-SMP
MNTCQ-DUP

Matrix.....: SOLID

Date Sampled....: 11/04/11

Date Received...: 11/08/11

% Moisture.....: 2.8

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Percent Moisture	2.8	2.6	%	5.9	(0-30)	SD Lot-Sample #: F1K080440-001 MCAWW 160.3 MOD	11/12-11/13/11	1316011

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #....: F1K080484

Work Order #....: MN3CC-SMP
MN3CC-DUP

Matrix.....: SOLID

Date Sampled....: 11/08/11

Date Received...: 11/16/11

% Moisture.....: 3.6

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Sulfate	42.4	41.7	mg/kg	1.6	(0-20)	MCAWW 300.0A	11/23/11	1327106
						SD Lot-Sample #: F1K160470-001		
						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

General Chemistry

Client Lot #...: SL1219

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Chloride	ND	Work Order #: MPAXN1AA 2.0	mg/kg	MB Lot-Sample #: MCAWW 300.0A	F1K230000-107 11/23/11	1327107
		Dilution Factor: 1				
Sulfate	ND	Work Order #: MPAXK1AA 5.0	mg/kg	MB Lot-Sample #: MCAWW 300.0A	F1K230000-106 11/23/11	1327106
		Dilution Factor: 1				

NOTE(S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: SL1219

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	20.0	18.9	mg/kg	94	MCAWW 300.0A	11/23/11	1327107
Work Order #: MPAXN1AC LCS Lot-Sample#: F1K230000-107 Dilution Factor: 1							
Sulfate	80.0	76.6	mg/kg	96	MCAWW 300.0A	11/23/11	1327106
Work Order #: MPAXK1AC LCS Lot-Sample#: F1K230000-106 Dilution Factor: 1							

NOTE(S) :

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

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: SL1219
 Date Sampled...: 11/08/11

Date Received...: 11/16/11

Matrix.....: SOLID

Percent Moisture: 1.8

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Chloride	10.5	20.7	30.1	mg/kg	95	MCAWW 300.0A	11/23/11	1327107
			Work Order #...: MN3CC1CM MS Lot-Sample #: F1K160470-001					
			Dilution Factor: 1					
Sulfate	42.4	41.5	81.4	mg/kg	94	MCAWW 300.0A	11/23/11	1327106
			Work Order #...: MN3CC1CN MS Lot-Sample #: F1K160470-001					
			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.

FORM II

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:06:00 AM

Lot-Sample No.: J1K070434-1

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H129

COC No.: F11-095-288

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRVX1AF	Report DB ID: MNRVX1ER			Orig Sa DB ID: 9MNRVX10			
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	11/7/11 02:30 p		2.4999	
	1.55E-01	U	RPD	0.0		3.50E-01		N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRVX1AG	Report DB ID: MNRVX1GR			Orig Sa DB ID: 9MNRVX10			
ALPHA	3.91E+00	U	3.3E+00	3.4E+00	5.51E+00	pCi/g	100%	0.71	11/13/11 10:54 a		0.0504	GPC10D
	3.45E+00	U	RPD	12.4		1.00E+01		(2.3)			g	

No. of Results: 2 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1.A2002 U.Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica

SDG: W06343

Matrix: SOIL

Report No. : 49620

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161 7196_CR6 Work Order: MNRV21AA Report DB ID: MNRV21AB												
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	11/7/11 02:30 p		2.5	
						1.55E-01		N/A			g	
Batch: 1312194 9310_ALPHABETA_GPC Work Order: MNTX41AA Report DB ID: MNTX41AB												
ALPHA	-6.65E-01	U	7.8E-01	7.9E-01	2.68E+00	pCi/g	100%	-0.25	11/13/11 02:41 p		0.0524	GPC10B
					1.07E+00	1.00E+01		-(1.7)			g	
Batch: 1312195 9310_ALPHABETA_GPC Work Order: MNTX51AA Report DB ID: MNTX51AB												
BETA	9.04E-01	U	1.8E+00	1.8E+00	4.03E+00	pCi/g	100%	0.22	11/13/11 06:01 p		0.203	GPC28C
					1.88E+00	1.50E+01		(1.)			g	
No. of Results: 3			Comments:									

FORM II
LCS RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica

SDG: W06343

Matrix: SOIL

Report No. : 49620

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6												
HEXCHROME	1.98E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		99%	11/7/11 02:30 p	2.5	
								Rec Limits: 80	120	0.0		g	
Batch: 1312194	9310_ALPHABETA_GPC												
ALPHA	7.64E+01		7.7E+00	1.8E+01	2.69E+00	pCi/g	100%	8.45E+01	8.54E-01	90%	11/13/11 02:41 p	0.054	GPC10D
								Rec Limits: 70	130	-0.1		g	
Batch: 1312195	9310_ALPHABETA_GPC												
BETA	6.37E+01		5.3E+00	9.9E+00	3.81E+00	pCi/g	100%	6.58E+01	2.54E+00	97%	11/13/11 06:01 p	0.2049	GPC28D
								Rec Limits: 70	130	0.0		g	
No. of Results: 3		Comments:											

FORM II

Date: 05-Dec-11

MATRIX SPIKE RESULTS

Lab Name: TestAmerica

SDG: W06343

Lot-Sample No.: J1K070434-1, B2H129

Report No.: 49620

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1311161	Work Order: MNRVX1AE	Report DB ID: MNRVX1CW	Orig Sa DB ID: 9MNRVX10								
HEXCHROME	8.17E+00 1.55E-01		0.0E+00	1.55E-01	mg/kg	N/A	77.59%	1.05E+01	11/7/11 02:30 p	2.5072 g	7196_CR6

Number of Results: 1

Comments:

TestAmerica RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V5.2.18.1 A2002

FORM II

Date: 06-Feb-12

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150504-1
 Client Sample ID: B2H123
 SDG: W06368
 Report No.: 49738
 COC No.: F11-095-364
 Collection Date: 11/8/2011 9:44:00 AM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6											
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5063	
	1.55E-01	U	RPD 0.0			3.50E-04 *		N/A	Orig Sa DB ID: 9MN2HJ10		g	

No. of Results: 1
 Comments: *1.55E-01
 SKS

TestAmerica RPD - Relative Percent Difference.
 rpt\$TLRchDupV5.2 MDC(MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.2 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica
Matrix: SOIL

SDG: W06368
Report No. : 49738

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142												
7196_CR6												
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5	
						1.55E-01		N/A			g	
Batch: 1322165												
9310_ALPHABETA_GPC												
ALPHA	-4.00E-01	U	9.8E-01	2.9E+00	2.82E+00	pCi/g	100%	-0.14	11/28/11 08:42 a		0.0501	GPC10C
					1.14E+00	1.00E+01		-0.27			g	
Batch: 1322166												
9310_ALPHABETA_GPC												
BETA	-9.93E-03	U	1.5E+00	1.5E+00	3.63E+00	pCi/g	100%	0.	11/28/11 08:19 a		0.2064	GPC32A
					1.68E+00	1.50E+01		-0.01			g	
No. of Results: 3			Comments:									

FORM II
MATRIX SPIKE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica

SDG: W06368

Lot-Sample No.: J1K150504-1, B2H123

Report No. : 49738

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1320142	Work Order: MN2HJ1AE	Report DB ID: MN2HJ1CW	Orig Sa DB ID: 9MN2HJ10								
HEXCHROME	8.87E+00		0.0E+00	1.55E-01	mg/kg	N/A	85.57%	1.04E+01	11/16/11 02:00 p	2.5113	7196_CR6
	1.55E-01									g	

Number of Results: 1

Comments:

TestAmerica RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
 rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 V5.2.18.2 A2002

Batch QC List**Group #** WSCF113437**Attention** Scot Fitzgerald
Department Inorganic

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
192749	192750	3	BLANK	66941	BLANK		Hexavalent chromium
192749	192750	4	LCS	66942	LCS		Hexavalent chromium
192749	192750	5	DUP	66943	B2JPD6(113429001DUP)	113429001	Hexavalent chromium
192749	192750	6	MS	66944	B2JPD6(113429001MS)	113429001	Hexavalent chromium
192749	192750	7	PSTSPK	66945	PSTSPK		Hexavalent chromium
192749	192750	8	IMS	66946	B2JPD6(113429001IMS)	113429001	Hexavalent chromium
192749	192750	13	SAMPLE	113437001	B2H165		Hexavalent chromium

Quality Control Report

Attention Scot Fitzgerald **Group #** WSCF113437
Department Inorganic

QC Batch	192749	Test	Hexavalent chromium
Associated Samples	113437001		

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
Hexavalent chromium	18540-29-9		<0.097	ug/g					U	12/20/11
LCS										
Hexavalent chromium	18540-29-9		3.25	ug/g	83.6	80 - 120				12/20/11
DUP										
Hexavalent chromium	18540-29-9		<0.10	ug/g			1.40	30	U	12/20/11
MS										
Hexavalent chromium	18540-29-9		2.40	ug/g	62.2	75 - 125			NX	12/20/11
PSTSPK										
Hexavalent chromium	18540-29-9		0.0393	ug/g	78.6	85 - 115			NX	12/20/11
IMS										
Hexavalent chromium	18540-29-9		255	ug/g	70.7	75 - 125			DNX	12/20/11

Batch QC List**Group #** WSCF113438**Attention** Scot Fitzgerald
Department Inorganic

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
192503	192544	4	BLANK	66148	BLANK		ICP-2008 MS All possible metal
192503	192544	5	LCS	66149	LCS		ICP-2008 MS All possible metal
192503	192544	7	MS	66150	B2JPD6(113429001MS)	113429001	ICP-2008 MS All possible metal
192503	192544	8	MSD	66151	B2JPD6(113429001MSD)	113429001	ICP-2008 MS All possible metal
192503	192544	15	SAMPLE	113438001	B2H166		ICP-2008 MS All possible metal
192813	192814	1	BLANK	67029	BLANK		Anions by Ion Chromatography (Solid)
192813	192814	3	LCS	67030	LCS		Anions by Ion Chromatography (Solid)
192813	192814	4	MS	67031	B2JPF4(113476001MS)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	5	MSD	67032	B2JPF4(113476001MSD)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	6	DUP	67033	B2JPF4(113476001DUP)	113476001	Anions by Ion Chromatography (Solid)
192813	192814	11	SAMPLE	113438001	B2H166		Anions by Ion Chromatography (Solid)

Quality Control Report

Attention Scot Fitzgerald **Group #** WSCF113438
Department Inorganic

QC Batch 192813 **Test** Anions by Ion Chromatography (Solid)
Associated Samples 113438001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
QC Sample #67029										
Chloride	16887-00-6		<0.058	ug/mL					U	12/19/11
Sulfate	14808-79-8		<0.11	ug/mL					U	12/19/11
LCS										
QC Sample #67030										
Chloride	16887-00-6	1.86		ug/mL	93.8	90 - 110				12/19/11
Sulfate	14808-79-8	3.68		ug/mL	93.9	90 - 110				12/19/11
MS										
QC Sample #67031										
Original 113476001										
Chloride	16887-00-6	44.7		mg/kg	88.6	80 - 120				12/19/11
Sulfate	14808-79-8	88.6		mg/kg	88.7	80 - 120				12/19/11
MSD										
QC Sample #67032										
Original 113476001										
Chloride	16887-00-6	45.0		mg/kg	89.3	80 - 120	0.80	30		12/19/11
Sulfate	14808-79-8	91.7		mg/kg	92	80 - 120	3.70	30		12/19/11
DUP										
QC Sample #67033										
Original 113476001										
Chloride	16887-00-6	<2.9		mg/kg			37.80	30	*	UX
Sulfate	14808-79-8	6.64		mg/kg			13.70	30	B	12/19/11

Date: 31 July 2012
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: 100-K
 Subject: Radiochemical - Sample Data Groups (SDGs) H4702, W06343, W06368 and WSCF113438

INTRODUCTION

This memorandum presents the results of data validation for SDG H4702 prepared by Eberline Services, SDGs W06343 and W06368 prepared by TestAmerica Laboratories, Inc. and SDG WSCF113438 prepared by WSCF Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2H1B8	12/08/11	Soil	C	Gross α & Gross β
B2H129	11/04/11	Soil	C	Gross α & Gross β
B2H131	11/04/11	Soil	C	Gross α & Gross β
B2H133	11/04/11	Soil	C	Gross α & Gross β
B2H123	11/08/11	Soil	C	Gross α & Gross β
B2H167	11/08/11	Soil	C	Gross α & Gross β
B2H169	11/08/11	Soil	C	Gross α & Gross β
B2H166	12/08/11	Soil	C	Gross α & Gross β

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5 (SAP). 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. 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 and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 180 days. There are no specific preservation requirements for radiochemical soil/solid analysis.

The samples were analyzed within the prescribed holding times.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable with the following exception. Gross beta was detected in equipment blank B2H169.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample results, and chemical recovery factors. Chemical recovery factors are determined through use of a carrier or tracer and provide assessment of the chemical separation process that is affected by the laboratory procedure, sample matrix, and/or interference. Chemical recovery factors are used to correct sample concentration, uncertainty, and MDC results. The laboratory control sample accuracy limits are ones specified by the DV procedure.

Matrix Spike (MS) Samples

MS analyses are not required for the methods performed.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

Carrier/Tracer Recovery Factors

Carrier/tracer analysis are not required for the methods performed.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate, field duplicate, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. The RPD limits for reported analytes are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the MDCs the precision limits are ones specified by the DV procedure.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

All field split results were acceptable with the following exception. Samples B2H166 and B2H1B8 had gross alpha results <5X the MDA; however difference between results was >2X the primary sample MDA.

- **Detection Limits**

Reported MDCs are compared against the contractually required detection limits (CRDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDCs were below the CRDLs.

- **Completeness**

SDGs H4702, W06373, W06368 and WSCF113438 were 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

None found.

REFERENCES

GRP-GD-002, Rev. 0, Change 0, *Data Validation for Radiochemical Analyses*, August 2010.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for and was not detected. The data should be considered usable for decision-making purposes.
- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the MDC. The data should be considered usable for decision-making purposes.
- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.
- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.
- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2
Summary of Data Qualification

Radiochemical Data Qualification Summary			
SDGs: H4702, W06343, W06368, WSCF113438	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Radiochemical	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

EBERLINE ANALYTICAL / RICHMOND
SAMPLE DELIVERY GROUP H4702

7854-001

B2H1B8

DATA SHEET

SDG <u>7854</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4702</u>
Contact <u>Joseph Verville</u>	Contract <u>No. 33677</u>	
Lab sample id <u>S112023-01</u>	Client sample id <u>B2H1B8</u>	
Dept sample id <u>7854-001</u>	Location/Matrix <u>183.7KE Soil Sample 7</u> <u>SOIL</u>	
Received <u>12/13/11</u>	Collected/Weight <u>12/08/11 09:45</u> <u>140.1 g</u>	
% solids <u>93.8</u>	Custody/SAF No <u>F11-095-377</u> <u>F11-095</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	5.44	2.9	3.13	10.0		93A
Gross Beta	12587-47-2	6.28	4.0	6.35	15.0	U	93B

183 KE/KW Water Treatment Plant - Soil

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:06:00 AM

Lot-Sample No.: J1K070434-1

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H129

COC No.: F11-095-288

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRVX1AA		Report DB ID: 9MNRVX10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/7/11 02:30 p		2.505	
							1.55E-01	N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRVX1AC		Report DB ID: 9MNRVX10					
ALPHA	3.45E+00	U	3.2E+00	3.2E+00	5.35E+00	pCi/g	100%	0.64	11/13/11 10:54 a		0.0505	GPC10B
							2.14E+00	1.00E+01			g	
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRVX1AD		Report DB ID: 9MNRVX10					
BETA	1.75E+01		3.6E+00	4.2E+00	5.01E+00	pCi/g	100%	(3.5)	11/13/11 06:01 p		0.2001	GPC26B
							2.34E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:24:00 AM

Lot-Sample No.: J1K070434-2

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H131

COC No.: F11-095-290

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRV01AA		Report DB ID: 9MNRV010					
HEXCHROME	5.82E-01			0.0E+00	1.55E-01	mg/kg	N/A	(3.8)	11/7/11 02:30 p		2.5011	
							1.55E-01	N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRV01AC		Report DB ID: 9MNRV010					
ALPHA	2.30E+00	U	3.2E+00	3.3E+00	6.37E+00	pCi/g	100%	0.36	11/13/11 10:54 a		0.0502	GPC10C
							2.67E+00	1.00E+01			g	
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRV01AD		Report DB ID: 9MNRV010					
BETA	1.51E+01		3.4E+00	3.9E+00	4.76E+00	pCi/g	100%	(3.2)	11/13/11 06:01 p		0.2001	GPC26C
							2.21E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.1 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I

Date: 05-Dec-11

SAMPLE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 11:35:00 AM

Lot-Sample No.: J1K070434-3

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H133

COC No.: F11-095-292

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRV11AA		Report DB ID: 9MNRV110					
HEXCHROME	1.55E-01	U	0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/7/11 02:30 p	2.5154			
						1.55E-01	N/A				g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRV11AC		Report DB ID: 9MNRV110					
ALPHA	4.94E+00		3.1E+00	3.3E+00	3.83E+00	pCi/g	100%	(1.3)	11/13/11 10:54 a		0.0502	GPC10A
						1.39E+00	1.00E+01	(3.)			g	
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRV11AD		Report DB ID: 9MNRV110					
BETA	2.33E+01		4.0E+00	5.0E+00	4.71E+00	pCi/g	100%	(5.)	11/13/11 06:01 p		0.2003	GPC28B
						2.19E+00	1.50E+01	(9.3)			g	
No. of Results:	3	Comments:										

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
 V5.2.18.1 A2002

EH
07/31/12

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica
Lot-Sample No.: J1K150504-1
Client Sample ID: B2H123

SDG: W06368
Report No. : 49738
COC No. : F11-095-364

Collection Date: 11/8/2011 9:44:00 AM
Received Date: 11/15/2011 2:35:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6				Work Order: MN2HJ1AA		Report DB ID: 9MN2HJ10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5136	
							1.55E-01	N/A			g	
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HJ1AC		Report DB ID: 9MN2HJ10					
ALPHA	2.68E+00	U	3.0E+00	1.9E+01	5.39E+00	pCi/g	100%	0.5	11/28/11 06:47 a		0.0503	GPC10C
							2.18E+00	1.00E+01			g	
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HJ1AD		Report DB ID: 9MN2HJ10					
BETA	1.69E+01		3.5E+00	3.0E+01	4.71E+00	pCi/g	100%	(3.6)	11/28/11 07:22 a		0.2003	GPC32B
							2.19E+00	1.50E+01			g	
No. of Results:	3	Comments:										

TestAmerica
rptSTLRchSample
V5.2.18.2 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica

SDG: W06368

Collection Date: 11/8/2011 9:44:00 AM

Lot-Sample No.: J1K150504-2

Report No.: 49738

Received Date: 11/15/2011 2:35:00 PM

Client Sample ID: B2H167

COC No.: F11-095-372

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6				Work Order: MN2HM1AA		Report DB ID: 9MN2HM10					
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5026	
							1.55E-01	N/A			g	
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HM1AC		Report DB ID: 9MN2HM10					
ALPHA	5.33E+00	U	3.2E+00	3.7E+01	3.83E+00	pCi/g	100%	(1.4)	11/28/11 08:42 a		0.0505	GPC10A
							1.39E+00	1.00E+01			g	
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HM1AD		Report DB ID: 9MN2HM10					
BETA	1.51E+01		3.3E+00	2.6E+01	4.53E+00	pCi/g	100%	(3.3)	11/28/11 07:22 a		0.2008	GPC32C
							2.10E+00	1.50E+01			g	

No. of Results: 3

Comments:

TestAmerica
rptSTLRchSample
V5.2.18.2 A2002

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 not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

EH
07/31/12

FORM I
SAMPLE RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica
Lot-Sample No.: J1K150504-3
Client Sample ID: B2H169

SDG: W06368
Report No.: 49738
COC No.: F11-095-374

Collection Date: 11/8/2011 8:30:00 AM
Received Date: 11/15/2011 2:35:00 PM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6			Work Order: MN2HQ1AA		Report DB ID: 9MN2HQ10						
HEXCHROME	1.55E-01	U	0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p	2.5183			
						1.55E-01	N/A				g	
Batch: 1322165	9310_ALPHABETA_GPC			Work Order: MN2HQ1AC		Report DB ID: 9MN2HQ10						
ALPHA	3.72E+00	U	2.9E+00	2.6E+01	4.10E+00	pCi/g	100%	0.91	11/28/11 08:42 a		0.0505	GPC10B
						1.51E+00	1.00E+01	0.29			g	
Batch: 1322166	9310_ALPHABETA_GPC			Work Order: MN2HQ1AD		Report DB ID: 9MN2HQ10						
BETA	2.08E+01		3.7E+00	3.6E+01	4.61E+00	pCi/g	100%	(4.5)	11/28/11 08:19 a		0.2	GPC31B
						2.14E+00	1.50E+01	(1.1)			g	

No. of Results: 3 Comments:

TestAmerica MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchSample U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.
V5.2.18.2 A2002

EH
07/31/12

WSCF Analytical Results Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Radiochemistry

Sample # 113438001
SAF# F11-095
Sample ID B2H166

Matrix SOIL
Sampled 12/08/11
Received 12/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415		1.3	.71	pCi/g	1	0.97		12/20/11
Gross Beta	12587-47-2	LA-508-415	U	<0.80	1.1	pCi/g	1	1.9		12/20/11

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X, Y or Z - See comment detail and/or narrative.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4702 was composed of one soil sample designated under SAF No. F11-095 with a Project Designation of: 183 KE/KW Water Treatment Plant - Soil.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analysis

The relative percent difference (RPD) in the original and duplicate gross alpha results was 50%, greater than the upper control limit of 30%, however per DOE QSAS, Rev. 2.5, "When the DER or the RPD pass, then the duplicate is acceptable." In this case the DER was 1.0, less than the control limit of 3.0. No other problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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



Joseph Verville
Client Services Manager

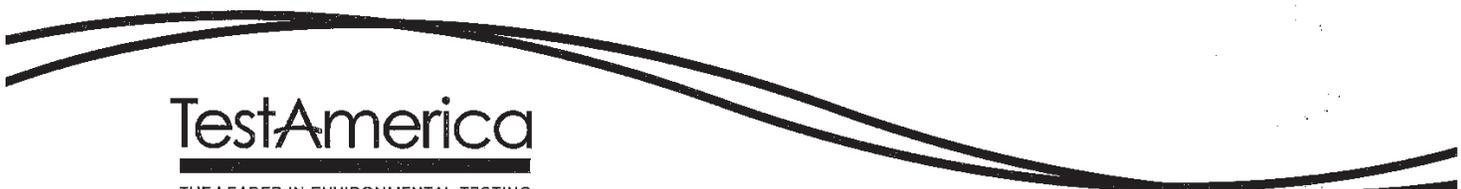
12/27/11

Date

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-377	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ H4702	TELEPHONE NO. 373-5869 (7834)	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 7		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6WS-258		FIELD LOGBOOK NO. HNF-N-507-24-1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 7930 0129 5178		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	None			
		HOLDING TIME	6 Months			
		TYPE OF CONTAINER	G/P			
		NO. OF CONTAINER(S)	1			
		VOLUME	120mL			
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2H1B8	SOIL	DEC 08 2011	0945	✓		

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young DEC 08 2011 1030	DATE/TIME	RECEIVED BY/STORED IN MOLLIGASSU #1 DEC 08 2011 1030	DATE/TIME	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLIGASSU #1 12/12/11 1000	DATE/TIME	RECEIVED BY/STORED IN K.J. Young 12/12/11 1000	DATE/TIME		
RELINQUISHED BY/REMOVED FROM K.J. Young 12/12/11 1115	DATE/TIME	RECEIVED BY/STORED IN FBO Ex	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FBO Ex 12/13/11 0930	DATE/TIME	RECEIVED BY/STORED IN RICHMOND MATAWARAW 12/13/11 0930	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
 P.O. Box 1600
 Mail Stop – R3-60
 Richland, WA 99352

December 05, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 7, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06343
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 7, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H129	MNRVX	SOIL	11/7/11
B2H131	MNRV0	SOIL	11/7/11
B2H133	MNRV1	SOIL	11/7/11

II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

III. 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.

CH2M Hill Plateau Remediation Company
December 05, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes 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.

QC and sample results are reported in the same units.

V. Comments

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H129) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H131) results are within contractual requirements.

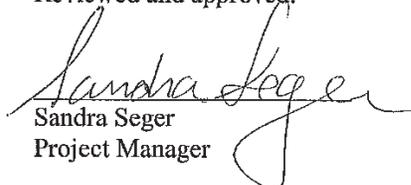
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H129) and sample matrix spike 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:


Sandra Seger
Project Manager

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-288	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample #2 183.2KE Pothole 1 Soil Sample #1 9/11/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095 30250ES10		PRICE CODE 8C AIR QUALITY <input type="checkbox"/> 9/11/11	
ICE CHEST NO. 6WS-017		FIELD LOGBOOK NO. HNF-N-507-24		ACTUAL SAMPLE DEPTH 0-1'		COA 30250ES10 302472ES10 10/27/11 METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION		None		SDG#W06343 LOT#J1K070434 Report: 11/22/11 RW 11/18/11	
		HOLDING TIME		30 Days / 6 Months			
		TYPE OF CONTAINER		G/P / G/P			
		NO. OF CONTAINER(S)		1 / 1			
		VOLUME		60mL / 120mL			
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H129	SOIL MVRVX	NOV 0 4 2011	1006	✓	✓		



J1K070434

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young CHPRC	NOV 0 4 2011 / 1300	Molloy SSU #1	NOV 0 4 2011 / 1300		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
Molloy SSU #1	NOV 0 7 2011 / 1200	K.J. Young CHPRC	NOV 0 7 2011 / 1200		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
K.J. Young CHPRC	NOV 0 7 2011 / 1345	Stackhouse	NOV 0 7 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-290	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 3 183.2KE Pothole 1 Soil Sample 2 JH 11/7/11		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-017		FIELD LOGBOOK NO. HNF-N-807-24	ACTUAL SAMPLE DEPTH 0-1'		COA 1025462610 302350 ESJC 10/27/11	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION None Cool 4C	None	SDG# WD 4343 LOT# JIKO 70434		
		HOLDING TIME	30 Days	6 Months			
		TYPE OF CONTAINER	G/P	G/P			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	60mL	120mL			
		SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H131	SOIL MNRVD	NOV 04 2011	1024	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young	DATE/TIME NOV 04 2011 / 1300	RECEIVED BY/STORED IN MOLLO9SSU #1	DATE/TIME NOV 04 2011 / 1300	Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLO9SSU	DATE/TIME NOV 07 2011 / 1200	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 07 2011 / 1345	RECEIVED BY/STORED IN J Beck / Beck	DATE/TIME NOV 07 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY		TITLE		DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY		DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-292	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION <i>183.7KE Soil Sample 8</i> <i>185.2KE Pothole 1 Soil Sample 3</i> <i>JA 11/7/11</i>		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095 <i>3023508510</i> <i>302422510</i> <i>10/27/11</i>	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>6US-017</i>		FIELD LOGBOOK NO. <i>MNF-N-507-24</i>	ACTUAL SAMPLE DEPTH <i>0-1'</i>	COA <i>3025468510</i> <i>10/27/11</i>	METHOD OF SHIPMENT GOVERNMENT VEHICLE		ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A <i>10/27/11</i>		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquid DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	<i>None</i> <i>Cool 4C</i>	None	<i>SIDG # 206313</i> <i>LOT # JIK070134</i>		
		HOLDING TIME	30 Days	6 Months			
		TYPE OF CONTAINER	G/P	G/P			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	60mL	120mL			
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H133	SOIL <i>MNRV1</i>	NOV 0 4 2011	1135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 0 4 2011 / 1300	RECEIVED BY/STORED IN MOLLIG SSO #1	DATE/TIME NOV 0 4 2011 / 1300	Th-232 will only be analyzed if gross alpha comes back high (1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MOLLIG SSO #1	DATE/TIME NOV 0 7 2011 / 1200	RECEIVED BY/STORED IN CHPRC	DATE/TIME NOV 0 7 2011 / 1200		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 0 7 2011 / 1345	RECEIVED BY/STORED IN S. Beck	DATE/TIME NOV 0 7 2011 / 1345		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

December 8, 2011

Attention: Scot Fitzgerald

SAF Number	:	F11-095
Date SDG Closed	:	November 15, 2011
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W06368
Data Deliverable	:	15 Day Summary

CASE NARRATIVE

I. Introduction

On November 15, 2011 three soil samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2H123	MN2HJ	SOIL	11/15/11
B2H167	MN2HM	SOIL	11/15/11
B2H169	MN2HQ	SOIL	11/15/11

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. 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.

CH2M Hill Plateau Remediation Company
December 8, 2011

The requested analyses were:

Gas Proportional Counting

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes 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.

QC and sample results are reported in the same units.

V. Comments

Gas Proportional Counting

Gross Alpha by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H123) results are within contractual requirements.

Gross Beta by method RL-GPC-001:

The LCS, batch blank, samples and sample duplicate (B2H167) results are within contractual requirements.

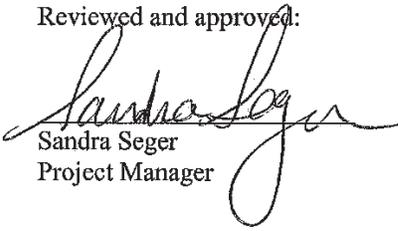
Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (B2H123) and sample matrix spike (B2H123) 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:


Sandra Seger
Project Manager

12/20/2011

Problem and Discrepancy Report

TARL**SDG W06368**

1. The data package has the following issues:

- a) Sample results, pages 8, 9, and 10, samples B2H123, B2H167, and B2H169, sample results are U qualified for 9310_ALPHABETA_GPC but are above the reporting limit.
- b) Sample results summary, page 6, hexavalent chromium, the CRDL for duplicate of sample B2H123 differs from CRDL on all other samples for hexavalent chromium. Inconsistency also on pages 8, 9, 10, and 11.

Resolution: *Provide correction.***Lab Response:** **Issue a – U qualifiers removed from results that are above the CRDL.****Amended report and amended EDD were submitted on 2-6-12.****Issue b – The CRDL was amended on pages 6 & 11 for the Cr6 duplicate sample (B2H123 DUP). No changes are necessary on pages 8, 9 & 10 as stated above. No changes are necessary to the EDD.**

Please correct the issues and resubmit the hardcopy **and** electronic data package.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-364	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C AIR QUALITY <input type="checkbox"/>
SAMPLING LOCATION 183.7KE Soil Sample 1		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24-1		ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION Cool~4C None		SDG# W06306 LOT # JTK150504 Report: 12/20/11 12/2/11 Pw/1/11 		
			HOLDING TIME 30 Days 6 Months				
			TYPE OF CONTAINER G/P G/P				
			NO. OF CONTAINER(S) 1 1				
			VOLUME 60mL 120mL				
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H123	SOIL MV2HJ	NOV 08 2011	0944	✓	✓		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1043	RECEIVED BY/STORED IN MG1109SSU #1 K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1043	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM MG1109SSU #1 CHPRC	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN Lucas V. ... TRC	DATE/TIME NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-372	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8C AIR QUALITY <input type="checkbox"/>
SAMPLING LOCATION 183.7KE Soil Sample 5		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil			SAF NO. F11-095	DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. MNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A			BILL OF LADING/AIR BILL NO. N/A		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	None	SDG W06368 LOT JIK15050U
			HOLDING TIME		30 Days	6 Months	
			TYPE OF CONTAINER		G/P	G/P	
			NO. OF CONTAINER(S)		1	1	
			VOLUME		60mL	120mL	
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS		Chromium Hex - 7196;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.		MATRIX*		SAMPLE DATE	SAMPLE TIME		
B2H167 MNJHM		SOIL		NOV 08 2011	0944	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
K.J. Young CHPRC	NOV 08 2011 / 1045	MOLLOA SSO #1	NOV 08 2011 / 1045		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
MOLLOA SSO #1	NOV 15 2011 / 1100	K.J. Young CHPRC	NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
K.J. Young CHPRC	NOV 15 2011 / 1435	Lucas W...	NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-374	PAGE 1 OF 1
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 183.7KE Soil Sample 6		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-107		FIELD LOGBOOK NO. HNF-N-507-24.1	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION Cool~4C None			
		HOLDING TIME 30 Days 6 Months			
		TYPE OF CONTAINER G/P G/P			
		NO. OF CONTAINER(S) 1 1			
		VOLUME 60mL 120mL			
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS Chromium Hex - 7196; SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H169	SOIL <i>MAN/2HQ</i>	NOV 08 2011	0830	✓	✓

*SDG W06368
LOT JK2H JK15D504*

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 08 2011 / 1045	RECEIVED BY/STORED IN M01109SSU #1	DATE/TIME NOV 08 2011 / 1045	(1) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};	
RELINQUISHED BY/REMOVED FROM M01109SSU #1	DATE/TIME NOV 15 2011 / 1100	RECEIVED BY/STORED IN K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1100		
RELINQUISHED BY/REMOVED FROM K.J. Young CHPRC	DATE/TIME NOV 15 2011 / 1435	RECEIVED BY/STORED IN W06368	DATE/TIME NOV 15 2011 / 1435		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF113438

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Vanadium – Detected in the Blank and evaluated. No sample results in this batch were affected. “C” Flags not required.
- All other applicable QC controls are within the established limits.

Organic Comments

PCB – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gross Alpha / Gross Beta:
 - Gross Alpha – The Blank is less than two times the RDL. “B” Flag not required.
 - All other applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F11-095-371	PAGE 1 OF 2
COLLECTOR K.J. Young CHPRC		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 183.7KE Soil Sample 4		PROJECT DESIGNATION 183 KE/KW Water Treatment Plant - Soil				PRICE CODE 8C DATA TURNAROUND 15 Days / 15 Days	
ICE CHEST NO. 6WS-107		FIELD LOGBOOK NO. HNF-N-507-24.1		ACTUAL SAMPLE DEPTH 0-1'		SAF NO. F11-095	
SHIPPED TO Waste Sampling & Characterization		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) 113438		PRESERVATION		METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
				Cool-1C	Cool-1C	Cool-1C	None
				1 yr/1 yr	6 Months	28 Days/48 Hours	6 Months
				g	g/p	g/p	g/p
				1	1	1	1
				250mL	250mL	60mL	120mL
				SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	IC Anions - 300.0 (Chloride Substa)	SEE ITEM (3) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2H166	1 SOIL	DEC 08 2011	0945	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
K.J. Young	DEC 08 2011/1105	M. Nelson	DEC 08 2011/1105		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

PRINTED ON 12/5/2011

A 6002-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHILL Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-095-371	PAGE 2 OF 2
COLLECTOR K.J. Young CHPRC	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5859	PROJECT COORDINATOR TRENT, SJ	PRICE CODE BC	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 183.7KF Soil Sample 4	PROJECT DESIGNATION 183 KF/KW Water Treatment Plant - Soil		SAF NO. F11-095	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. GWS-107	FIELD LOGBOOK NO. HNF-N507-211	ACTUAL SAMPLE DEPTH 0-1'	COA 302548ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL	
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A				
SPECIAL INSTRUCTIONS						
<p>** The CACN for all analytical work at WSCF laboratory is 402114ES20. ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. Th-232 will only be analyzed if gross alpha comes back high (1) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260}; (2) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Boron, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; (3) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};</p>						
PRINTED ON 12/5/2011						
A-6003-618 (REV 2)						

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December 21, 2011 12:12:13

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Report ID: 113438
Group # WSCF113438

Appendix 5

Data Validation Supporting Documentation

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Appendix B - Radiochemical Data Validation Checklist

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-020		
VALIDATOR: Eyda Hergenreder		LAB: Eberline, TestAmerica, WSCF		DATE: 07-31-2012	
			SDG: H4702, W06343, W06368, WSCF113438		
ANALYSES PERFORMED					
Gross Alpha/Beta X	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium	C-14	I-129	
SAMPLES/MATRIX Soil samples SDG H4702: B2H1B8 SDG W06343: B2H129, B2H131, B2H133 SDG W06368: B2H123, B2H167, B2H169 SDG WSCF113438: B2H166					

1. Completeness N/A
 Technical verification forms present? Yes No N/A
 Comments: None

2. Initial Calibration (Levels D, E) N/A
 Instruments/detectors calibrated? Yes No N/A
 Initial calibration acceptable? Yes No N/A
 Standards NIST traceable? Yes No N/A
 Standards Expired? Yes No N/A
 Calculation check acceptable? Yes No N/A

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Comments:

- 3. Continuing Calibration (Levels D, E)..... N/A
- Calibration checked within required frequency? Yes No N/A
- Calibration check acceptable? Yes No N/A
- Calibration check standards traceable? Yes No N/A
- Calibration check standards expired? Yes No N/A
- Calculation check acceptable? Yes No N/A

Comments:

- 4. Background Counts (Levels D, E) N/A
- Background Counts checked within required frequency? Yes No N/A
- Background Counts acceptable? Yes No N/A
- Calculation check acceptable? Yes No N/A

Comments:

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

5. Blanks (Levels B, C, D, E) N/A
- Method blank analyzed within required frequency? Yes No N/A
- Method blank results acceptable? Yes No N/A
- Analytes detected in method blank? Yes No N/A
- Field blank(s) analyzed? Yes No N/A
- Field blank results acceptable? Yes No N/A
- Analytes detected in field blank(s)? Yes No N/A
- Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments:

EB sample B2H169 gross beta 20.8 pCi/g

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) N/A
- LCS /BSS analyzed within required frequency? Yes No N/A
- LCS/BSS recoveries acceptable? Yes No N/A
- LCS/BSS traceable? (Levels D,E) Yes No N/A
- LCS/BSS expired? (Levels D,E) Yes No N/A
- LCS/BSS levels correct? (Levels D,E) Yes No N/A
- Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: None

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

7. Chemical Carrier Recovery (Levels C, D, E) N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? (Levels D, E) Yes No N/A

Chemical carrier expired? (Levels D, E) Yes No N/A

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

Comments: None

8. Tracer Recovery (Levels C, D, E) N/A

Tracer added? Yes No N/A

Tracer recovery acceptable? Yes No N/A

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

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

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

Comments: None

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

9. Matrix Spikes (Levels C, D, E)..... N/A

Matrix spike analyzed?..... Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? (Levels D, E) Yes No N/A

Spike source expired? Levels D, E) Yes No N/A

Transcription/Calculation Errors? (Levels D, E)..... Yes No N/A

Comments: None

10. Duplicates (Levels C, D, E) N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? (Levels D, E)..... Yes No N/A

Comments: None

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

11. Field QC Samples (Levels C, D E) N/A
- Field duplicate sample(s) analyzed? Yes No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split sample(s) analyzed? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Performance audit sample(s) analyzed? Yes No N/A
- Performance audit sample results acceptable? Yes No N/A

Comments:

Split samples B2H166/B2H1B8: gross alpha difference >2X primary sample MDA.

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: None

13. Results and Detection Limits (All Levels)..... N/A

- Results reported for all required sample analyses? Yes No N/A
- Results supported in raw data?(Levels D, E) Yes No N/A
- Results Acceptable? (Levels D, E) Yes No N/A
- Transcription/Calculation errors? (Levels D, E) Yes No N/A
- MDA's meet required detection limits? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: None

Data Validation for Radiochemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

Appendix 6

Additional Documentation Requested By Client

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP H4702

7854-003

Method Blank

METHOD BLANK

SDG <u>7854</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4702</u>
Contact <u>Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>S112023-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7854-003</u>	Material/Matrix <u>SOIL</u>	
	SAF No <u>F11-095</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1.48	2.0	3.48	10.0	U	93A
Gross Beta	12587-47-2	-1.01	3.9	6.99	15.0	U	93B

QC-BLANK #80722

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4702

7854-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7854</u>	Client/Case no <u>CHPRC</u>	<u>SDG H4702</u>
Contact <u>Joseph Verville</u>	Contract <u>No. 33677</u>	
Lab sample id <u>S112023-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7854-002</u>	Material/Matrix <u>SOIL</u>	
	SAF No <u>F11-095</u>	

ANALYTE	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2 σ ERR pCi/g	REC %	3 σ LMIS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	111	12	3.54	10.0	93A		101	4.0	110	61-139	80-120
Gross Beta	81.6	7.0	5.80	15.0	93B		85.6	3.4	95	68-132	80-120

QC-LCS #80721

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id <u>EBRLNE</u>
Protocol <u>F11-095</u>
Version <u>Ver 1.1</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>12/27/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4702

7854-004

B2H1B8

DUPLICATE

SDG <u>7854</u>	Client/Case no <u>CHPRC</u>	<u>SDG H4702</u>
Contact <u>Joseph Verville</u>	Contract No. <u>33677</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>S112023-04</u>	Lab sample id <u>S112023-01</u>	Client sample id <u>B2H1B8</u>
Dept sample id <u>7854-004</u>	Dept sample id <u>7854-001</u>	Location/Matrix <u>183.7KE Soil Sample 7</u> <u>SOIL</u>
	Received <u>12/13/11</u>	Collected/Weight <u>12/08/11 09:45</u> <u>140.1 g</u>
% solids <u>93.8</u>	% solids <u>93.8</u>	Custody/SAF No <u>F11-095-377</u> <u>F11-095</u>

ANALYTE	DUPLICATE pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2 σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3 σ TOT	DER σ
Gross Alpha	3.25	2.8	4.06	10.0	U	93A	5.44	2.9	3.13		50	146	1.0
Gross Beta	7.70	4.1	6.41	15.0		93B	6.28	4.0	6.35	U	20	130	0.5

QC-DUP#1 80723

183 KE/KW Water Treatment Plant - Soil

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id EBRLNE
 Protocol F11-095
 Version Ver 1.1
 Form DVD-DUP
 Version 3.06
 Report date 12/27/11

FORM II

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica

SDG: W06343

Collection Date: 11/4/2011 10:06:00 AM

Lot-Sample No.: J1K070434-1

Report No.: 49620

Received Date: 11/7/2011 1:45:00 PM

Client Sample ID: B2H129

COC No.: F11-095-288

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6				Work Order: MNRVX1AF	Report DB ID: MNRVX1ER			Orig Sa DB ID: 9MNRVX10			
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	11/7/11 02:30 p		2.4999	
	1.55E-01	U	RPD	0.0		3.50E-01		N/A			g	
Batch: 1312194	9310_ALPHABETA_GPC				Work Order: MNRVX1AG	Report DB ID: MNRVX1GR			Orig Sa DB ID: 9MNRVX10			
ALPHA	3.91E+00	U	3.3E+00	3.4E+00	5.51E+00	pCi/g	100%	0.71	11/13/11 10:54 a		0.0504	GPC10D
	3.45E+00	U	RPD	12.4		1.00E+01		(2.3)			g	

No. of Results: 2 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1.A2002 U.Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 05-Dec-11

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K070434-2
 Client Sample ID: B2H131 DUP

SDG: W06343
 Report No.: 49620
 COC No.:

Collection Date: 11/4/2011 10:24:00 AM
 Received Date: 11/7/2011 1:45:00 PM
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1312195	9310_ALPHABETA_GPC				Work Order: MNRV01AE	Report DB ID: MNRV01ER			Orig Sa DB ID: 9MNRV010			
BETA	1.72E+01		3.5E+00	4.1E+00	4.56E+00	pCi/g	100%	(3.8)	11/13/11 06:01 p		0.2004	GPC26D
	1.51E+01		RPD 12.9			1.50E+01		(8.3)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.1 A2002

FORM II
BLANK RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica

SDG: W06343

Matrix: SOIL

Report No. : 49620

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1311161 7196_CR6 Work Order: MNRV21AA Report DB ID: MNRV21AB												
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	11/7/11 02:30 p		2.5	
						1.55E-01		N/A			g	
Batch: 1312194 9310_ALPHABETA_GPC Work Order: MNTX41AA Report DB ID: MNTX41AB												
ALPHA	-6.65E-01	U	7.8E-01	7.9E-01	2.68E+00	pCi/g	100%	-0.25	11/13/11 02:41 p		0.0524	GPC10B
					1.07E+00	1.00E+01		-(1.7)			g	
Batch: 1312195 9310_ALPHABETA_GPC Work Order: MNTX51AA Report DB ID: MNTX51AB												
BETA	9.04E-01	U	1.8E+00	1.8E+00	4.03E+00	pCi/g	100%	0.22	11/13/11 06:01 p		0.203	GPC28C
					1.88E+00	1.50E+01		(1.)			g	
No. of Results: 3			Comments:									

FORM II
LCS RESULTS

Date: 05-Dec-11

Lab Name: TestAmerica

SDG: W06343

Matrix: SOIL

Report No. : 49620

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 1311161	7196_CR6												
HEXCHROME	1.98E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		99%	11/7/11 02:30 p	2.5	
							Rec Limits:	80	120	0.0		g	
Batch: 1312194	9310_ALPHABETA_GPC												
ALPHA	7.64E+01		7.7E+00	1.8E+01	2.69E+00	pCi/g	100%	8.45E+01	8.54E-01	90%	11/13/11 02:41 p	0.054	GPC10D
							Rec Limits:	70	130	-0.1		g	
Batch: 1312195	9310_ALPHABETA_GPC												
BETA	6.37E+01		5.3E+00	9.9E+00	3.81E+00	pCi/g	100%	6.58E+01	2.54E+00	97%	11/13/11 06:01 p	0.2049	GPC28D
							Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:											

FORM II

Date: 06-Feb-12

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150504-1
 Client Sample ID: B2H123 DUP

SDG: W06368
 Report No. : 49738
 COC No. : F11-095-364

Collection Date: 11/8/2011 9:44:00 AM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1322165	9310_ALPHABETA_GPC				Work Order: MN2HJ1AG	Report DB ID: MN2HJ1GR			Orig Sa DB ID: 9MN2HJ10			
ALPHA	5.33E+00	U	3.7E+00	3.7E+01	5.62E+00	pCi/g	100%	0.95	11/28/11 06:47 a		0.0508	GPC10D
	2.68E+00	U		RPD 66.3		1.00E+01		0.29			9	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Le - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.2 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 06-Feb-12

DUPLICATE RESULTS

Lab Name: TestAmerica
 Lot-Sample No.: J1K150504-2
 Client Sample ID: B2H167 DUP

SDG: W06368
 Report No.: 49738
 COC No.: F11-095-372

Collection Date: 11/8/2011 9:44:00 AM
 Received Date: 11/15/2011 2:35:00 PM
 Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1322166	9310_ALPHABETA_GPC				Work Order: MN2HM1AE	Report DB ID: MN2HM1ER			Orig Sa DB ID: 9MN2HM10			
BETA	1.78E+01		3.7E+00	3.1E+01	5.20E+00	pCi/g	100%	(3.4)	11/28/11 07:22 a		0.2004	GPC32D
	1.51E+01		RPD	16.0		1.50E+01		(1.1)			g	

No. of Results: 1 Comments:

TestAmerica RPD - Relative Percent Difference.
 rptSTLRchDupV5.2 MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 .18.2 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica
Matrix: SOIL

SDG: W06368
Report No. : 49738

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1320142												
7196_CR6												
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	(1.)	11/16/11 02:00 p		2.5	
						1.55E-01		N/A			g	
Batch: 1322165												
9310_ALPHABETA_GPC												
ALPHA	-4.00E-01	U	9.8E-01	2.9E+00	2.82E+00	pCi/g	100%	-0.14	11/28/11 08:42 a		0.0501	GPC10C
					1.14E+00	1.00E+01		-0.27			g	
Batch: 1322166												
9310_ALPHABETA_GPC												
BETA	-9.93E-03	U	1.5E+00	1.5E+00	3.63E+00	pCi/g	100%	0.	11/28/11 08:19 a		0.2064	GPC32A
					1.68E+00	1.50E+01		-0.01			g	
No. of Results: 3			Comments:									

FORM II
LCS RESULTS

Date: 06-Feb-12

Lab Name: TestAmerica
Matrix: SOIL

SDG: W06368
Report No. : 49738

Parameter	Result	Count Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 1320142	7196_CR6			Work Order: MN3CM1AC				Report DB ID: MN3CM1AS					
HEXCHROME	1.97E+01			0.0E+00	1.55E-01	mg/kg	N/A	2.00E+01		99%	11/16/11 02:00 p	2.5	
							Rec Limits:	80	120	0.0		g	
Batch: 1322165	9310_ALPHABETA_GPC			Work Order: MN47G1AC				Report DB ID: MN47G1CS					
ALPHA	9.38E+01	8.9E+00		6.5E+02	2.95E+00	pCi/g	100%	9.38E+01	9.48E-01	100%	11/28/11 08:42 a	0.0503	GPC10D
							Rec Limits:	70	130	0.0		g	
Batch: 1322166	9310_ALPHABETA_GPC			Work Order: MN47L1AC				Report DB ID: MN47L1CS					
BETA	6.57E+01	5.4E+00		1.1E+02	3.82E+00	pCi/g	100%	6.73E+01	2.59E+00	98%	11/28/11 08:19 a	0.2012	GPC32B
							Rec Limits:	70	130	0.0		g	
No. of Results: 3		Comments:											

Batch QC List**Group #** WSCF113438**Attention** Scot Fitzgerald
Department Radiochemistry

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
192645	192670	1	BLANK	66606	BLANK		Gross Alpha/Gross Beta
192645	192670	2	LCS	66607	LCS		Gross Alpha/Gross Beta
192645	192670	3	DUP	66608	B2H166(113438001DUP)	113438001	Gross Alpha/Gross Beta
192645	192670	4	SAMPLE	113438001	B2H166		Gross Alpha/Gross Beta
192645	192670	5	SAMPLE	113438001	B2H166		Gross Alpha/Gross Beta

Quality Control Report

Group # WSCF113438

Attention Scot Fitzgerald
Department Radiochemistry

QC Batch 192645 Test Gross Alpha/Gross Beta
Associated Samples 113438001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
QC Sample #66606										
Gross Alpha	12587-46-1	0.81		pCi/g					X	12/20/11
Gross Beta	12587-47-2	<-0.18		pCi/g					U	12/20/11
LCS										
QC Sample #66607										
Gross Alpha	12587-46-1	5.0		pCi/g	84.4	80 - 120				12/20/11
Gross Beta	12587-47-2	25		pCi/g	95.3	80 - 120				12/20/11
DUP										
QC Sample #66608										
Original 113438001										
Gross Alpha	12587-46-1	1.3	<0.74	pCi/g			54.00	30	* U	12/20/11
Gross Beta	12587-47-2	<0.80	<0.65	pCi/g			20.60	30	U	12/20/11