ANALYTICAL QUALITY ASSOCIATES, INC.
616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Data Validation Report for CH2M Hill Plateau Remediation Company

VSR10-015
Project 100-K RA

Chemical & Radiochemical Validation - Level C

Validation Performed By: Carl Schlosser **Date:** 5-03-2010

Validation Reviewed By: Cheryl A. Schlosser **Date:** 5-03-2010

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Date: 3 May 2010
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K RA
Subject: Inorganics - Sample Data Groups (SDGs) WSCF20100515 and WSCF100646

INTRODUCTION

This memorandum presents the results of data validation for SDGs WSCF20100515 and WSCF100646 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
B23K53	4/01/2010	Soil	C	6010 & 200.8
B23K54	4/01/2010	Soil	C	6010 & 200.8
B23K55	4/01/2010	Soil	C	6010 & 200.8
B23K56	4/01/2010	Soil	C	6010 & 200.8
B23K57	4/01/2010	Soil	C	6010 & 200.8
B23K58	4/01/2010	Soil	C	6010 & 200.8
B23K59	4/01/2010	Soil	C	6010 & 200.8
B23K60	4/01/2010	Soil	C	6010 & 200.8
B23K61	4/01/2010	Soil	C	6010 & 200.8
B250H2	4/01/2010	Water	C	6010 & 200.8

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 soil samples requires chilling to 4 degrees Celsius. Sample preservation for water samples requires chilling to 4 degrees Celsius and acid preservation with nitric acid to pH <2.

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 WSCF100646, the B and V laboratory blank results were > the method detection limits (MDLs). The associated sample results were non-detects and should not be qualified.

Trip Blanks

No trip blanks were submitted for analysis.

Field Blanks

No field blanks were submitted for analysis.

Equipment Blanks

No equipment blanks were submitted for analysis.

- **Accuracy**

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

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

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

For SDG WSCF20100515, the MS recovery for Mn was < the lower acceptance limit but ≥30%. All Mn soil sample results were detects should be qualified as estimates and flagged "J."

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing MS/MSD 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 ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs for soils exceed the limits and have associated results <5X the SAP required detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <2X the required detection limits no precision infraction occurred. When duplicate RPDs for waters exceed the limits and have associated results <5X the required SAP detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <1X the required detection limits no precision infraction occurred.

MS/MSD Samples

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

For SDG WSCF20100515, the Mn RPD was above the acceptance limit. All Mn soil sample results were detects should be qualified as estimates and flagged "J."

Field Duplicate Samples

No field duplicates were submitted for analysis.

Field Split Samples

No field splits were submitted for analysis.

- **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 soil sample MDLs were below the CRDLs. It should be noted that water sample CRDLs were not provided in the SAP.

- **Completeness**

SDGs WSCF20100515 and WSCF100646 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 Mn soil sample results as estimates were due to a matrix spike recovery and RPD infractions.

REFERENCES

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses*, June 2004.

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 MDL. 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.

- **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: WSCF20100515 & WSCF100646	Reviewer: AQA	Project: 100-K RA	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Mn	J	B23K53, B23K54, B23K55, B23K56, B23K57, B23K58, B23K59, B23K60, B23K61	Low MS recovery & poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00924
Client ID: B23K53 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		7.94	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.8	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	311	mg/kg	J		0.87	0.0866		04/09/10
Nickel	7440-02-0	LA-505-412		8.19	mg/kg			0.87	0.173		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0866	mg/kg			0.87	0.0866		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.260	mg/kg			0.87	0.260		04/09/10
Barium	7440-39-3	LA-505-412		57.7	mg/kg			0.87	0.173		04/09/10
Beryllium	7440-41-7	LA-505-412		0.250	mg/kg			0.87	0.0433		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0866	mg/kg			0.87	0.0866		04/09/10
Chromium	7440-47-3	LA-505-412		6.46	mg/kg			0.87	0.433		04/09/10
Cobalt	7440-48-4	LA-505-412		8.55	mg/kg			0.87	0.0433		04/09/10
Copper	7440-50-8	LA-505-412		14.7	mg/kg			0.87	0.0866		04/09/10
Vanadium	7440-62-2	LA-505-412		52.0	mg/kg			0.87	0.173		04/09/10
Zinc	7440-66-6	LA-505-412		41.3	mg/kg			0.87	0.693		04/09/10
Lead	7439-92-1	LA-505-412		5.92	mg/kg			0.87	0.0866		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0433	mg/kg			0.87	0.0433		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.420	mg/kg			0.87	0.0433		04/09/10
Uranium	7440-61-1	LA-505-412		0.420	mg/kg			0.87	0.0433		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00924
Client ID: B23K53 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		2.69	mg/kg			0.87	0.346		04/09/10
Selenium	7782-49-2	LA-505-412		1.48	mg/kg			0.87	0.260		04/09/10
Strontium	7440-24-6	LA-505-412		25.8	mg/kg			0.87	0.0866		04/09/10
Tin	7440-31-5	LA-505-412		0.450	mg/kg			0.87	0.0433		04/09/10

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00925
Client ID: B23K54 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~04/08/10~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-205-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		6.73	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.7	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	289	mg/kg	J		0.97	0.0973		04/09/10
Nickel	7440-02-0	LA-505-412		7.38	mg/kg			0.97	0.195		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0973	mg/kg			0.97	0.0973		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.292	mg/kg			0.97	0.292		04/09/10
Barium	7440-39-3	LA-505-412		45.4	mg/kg			0.97	0.195		04/09/10
Beryllium	7440-41-7	LA-505-412		0.210	mg/kg			0.97	0.0486		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0973	mg/kg			0.97	0.0973		04/09/10
Chromium	7440-47-3	LA-505-412		5.37	mg/kg			0.97	0.486		04/09/10
Cobalt	7440-48-4	LA-505-412		8.29	mg/kg			0.97	0.0486		04/09/10
Copper	7440-50-8	LA-505-412		14.2	mg/kg			0.97	0.0973		04/09/10
Vanadium	7440-62-2	LA-505-412		56.2	mg/kg			0.97	0.195		04/09/10
Zinc	7440-66-6	LA-505-412		39.4	mg/kg			0.97	0.778		04/09/10
Lead	7439-92-1	LA-505-412		3.82	mg/kg			0.97	0.0973		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0486	mg/kg			0.97	0.0486		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg			0.97	0.0486		04/09/10
Uranium	7440-61-1	LA-505-412		0.550	mg/kg			0.97	0.0486		04/09/10

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00925
Client ID: B23K54 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		2.47	mg/kg			0.97	0.389		04/09/10
Selenium	7782-49-2	LA-505-412		1.51	mg/kg			0.97	0.292		04/09/10
Strontium	7440-24-6	LA-505-412		22.2	mg/kg			0.97	0.0973		04/09/10
Tin	7440-31-5	LA-505-412		0.420	mg/kg			0.97	0.0486		04/09/10

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00926
Client ID: B23K55 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~04/08/10~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-408~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		9.24	mg/kg			99.48	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	13.8	mg/kg			99.48	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	313	mg/kg	J		0.99	0.0988		04/09/10
Nickel	7440-02-0	LA-505-412		10.7	mg/kg			0.99	0.198		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0988	mg/kg			0.99	0.0988		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.296	mg/kg			0.99	0.296		04/09/10
Barium	7440-39-3	LA-505-412		66.6	mg/kg			0.99	0.198		04/09/10
Beryllium	7440-41-7	LA-505-412		0.190	mg/kg			0.99	0.0494		04/09/10
Cadmium	7440-43-9	LA-505-412		0.120	mg/kg			0.99	0.0988		04/09/10
Chromium	7440-47-3	LA-505-412		9.63	mg/kg			0.99	0.494		04/09/10
Cobalt	7440-48-4	LA-505-412		7.32	mg/kg			0.99	0.0494		04/09/10
Copper	7440-50-8	LA-505-412		14.6	mg/kg			0.99	0.0988		04/09/10
Vanadium	7440-62-2	LA-505-412		45.1	mg/kg			0.99	0.198		04/09/10
Zinc	7440-66-6	LA-505-412		56.1	mg/kg			0.99	0.790		04/09/10
Lead	7439-92-1	LA-505-412		8.17	mg/kg			0.99	0.0988		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0494	mg/kg			0.99	0.0494		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg			0.99	0.0494		04/09/10
Uranium	7440-61-1	LA-505-412		0.560	mg/kg			0.99	0.0494		04/09/10

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U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

LS
5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00926
Client ID: B23K55 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		3.41	mg/kg			0.99	0.395		04/09/10
Selenium	7782-49-2	LA-505-412		0.990	mg/kg			0.99	0.296		04/09/10
Strontium	7440-24-6	LA-505-412		39.0	mg/kg			0.99	0.0988		04/09/10
Tin	7440-31-5	LA-505-412		0.430	mg/kg			0.99	0.0494		04/09/10

MDL = Minimum Detection Limit
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DF = Dilution Factor

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00927
Client ID: B23K56 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		10.7	mg/kg			99.54	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.8	mg/kg			99.54	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	310	mg/kg	J		0.99	0.0991		04/09/10
Nickel	7440-02-0	LA-505-412		10.5	mg/kg			0.99	0.198		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0990	mg/kg			0.99	0.0991		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.297	mg/kg			0.99	0.297		04/09/10
Barium	7440-39-3	LA-505-412		73.5	mg/kg			0.99	0.198		04/09/10
Beryllium	7440-41-7	LA-505-412		0.220	mg/kg			0.99	0.0495		04/09/10
Cadmium	7440-43-9	LA-505-412		0.120	mg/kg			0.99	0.0991		04/09/10
Chromium	7440-47-3	LA-505-412		10.2	mg/kg			0.99	0.495		04/09/10
Cobalt	7440-48-4	LA-505-412		6.95	mg/kg			0.99	0.0495		04/09/10
Copper	7440-50-8	LA-505-412		14.9	mg/kg			0.99	0.0991		04/09/10
Vanadium	7440-62-2	LA-505-412		40.7	mg/kg			0.99	0.198		04/09/10
Zinc	7440-66-6	LA-505-412		56.3	mg/kg			0.99	0.792		04/09/10
Lead	7439-92-1	LA-505-412		9.04	mg/kg			0.99	0.0991		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0495	mg/kg			0.99	0.0495		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg			0.99	0.0495		04/09/10
Uranium	7440-61-1	LA-505-412		0.650	mg/kg			0.99	0.0495		04/09/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

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U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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LS
5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00927
Client ID: B23K56 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		3.28	mg/kg			0.99	0.396		04/09/10
Selenium	7782-49-2	LA-505-412		1.21	mg/kg			0.99	0.297		04/09/10
Strontium	7440-24-6	LA-505-412		46.0	mg/kg			0.99	0.0991		04/09/10
Tin	7440-31-5	LA-505-412		0.430	mg/kg			0.99	0.0495		04/09/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00928
Client ID: B23K57 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		7.55	mg/kg			99.92	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.3	mg/kg			99.92	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	292	mg/kg	J		0.96	0.0962		04/09/10
Nickel	7440-02-0	LA-505-412		9.49	mg/kg			0.96	0.192		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0962	mg/kg			0.96	0.0962		04/09/10
Antimony	7440-36-0	LA-505-412		0.320	mg/kg			0.96	0.289		04/09/10
Barium	7440-39-3	LA-505-412		60.0	mg/kg			0.96	0.192		04/09/10
Beryllium	7440-41-7	LA-505-412		0.110	mg/kg			0.96	0.0481		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0962	mg/kg			0.96	0.0962		04/09/10
Chromium	7440-47-3	LA-505-412		8.64	mg/kg			0.96	0.481		04/09/10
Cobalt	7440-48-4	LA-505-412		7.81	mg/kg			0.96	0.0481		04/09/10
Copper	7440-50-8	LA-505-412		15.0	mg/kg			0.96	0.0962		04/09/10
Vanadium	7440-62-2	LA-505-412		47.6	mg/kg			0.96	0.192		04/09/10
Zinc	7440-66-6	LA-505-412		50.5	mg/kg			0.96	0.770		04/09/10
Lead	7439-92-1	LA-505-412		13.9	mg/kg			0.96	0.0962		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0481	mg/kg			0.96	0.0481		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.490	mg/kg			0.96	0.0481		04/09/10
Uranium	7440-61-1	LA-505-412		0.440	mg/kg			0.96	0.0481		04/09/10

MDL = Minimum Detection Limit
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LS
5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00928
Client ID: B23K57 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		3.16	mg/kg			0.96	0.385		04/09/10
Selenium	7782-49-2	LA-505-412		1.18	mg/kg			0.96	0.289		04/09/10
Strontium	7440-24-6	LA-505-412		30.8	mg/kg			0.96	0.0962		04/09/10
Tin	7440-31-5	LA-505-412		0.530	mg/kg			0.96	0.0481		04/09/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00929
Client ID: B23K58 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.44	mg/kg			99.50	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.9	mg/kg			99.50	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	270	mg/kg	J		0.93	0.0926		04/09/10
Nickel	7440-02-0	LA-505-412		6.44	mg/kg			0.93	0.185		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0926	mg/kg			0.93	0.0926		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.278	mg/kg			0.93	0.278		04/09/10
Barium	7440-39-3	LA-505-412		51.7	mg/kg			0.93	0.185		04/09/10
Beryllium	7440-41-7	LA-505-412		0.160	mg/kg			0.93	0.0463		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0926	mg/kg			0.93	0.0926		04/09/10
Chromium	7440-47-3	LA-505-412		3.53	mg/kg			0.93	0.463		04/09/10
Cobalt	7440-48-4	LA-505-412		8.08	mg/kg			0.93	0.0463		04/09/10
Copper	7440-50-8	LA-505-412		13.7	mg/kg			0.93	0.0926		04/09/10
Vanadium	7440-62-2	LA-505-412		50.6	mg/kg			0.93	0.185		04/09/10
Zinc	7440-66-6	LA-505-412		37.0	mg/kg			0.93	0.741		04/09/10
Lead	7439-92-1	LA-505-412		2.93	mg/kg			0.93	0.0926		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0463	mg/kg			0.93	0.0463		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.330	mg/kg			0.93	0.0463		04/09/10
Uranium	7440-61-1	LA-505-412		1.03	mg/kg			0.93	0.0463		04/09/10

MDL=Minimum Detection Limit
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5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00929
Client ID: B23K58 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		1.90	mg/kg			0.93	0.371		04/09/10
Selenium	7782-49-2	LA-505-412		1.69	mg/kg			0.93	0.278		04/09/10
Strontium	7440-24-6	LA-505-412		21.1	mg/kg			0.93	0.0926		04/09/10
Tin	7440-31-5	LA-505-412		0.410	mg/kg			0.93	0.0463		04/09/10

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00930
Client ID: B23K59 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		5.13	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	17.7	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	294	mg/kg	J		0.99	0.0985		04/09/10
Nickel	7440-02-0	LA-505-412		5.96	mg/kg			0.99	0.197		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0985	mg/kg			0.99	0.0985		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.296	mg/kg			0.99	0.296		04/09/10
Barium	7440-39-3	LA-505-412		57.6	mg/kg			0.99	0.197		04/09/10
Beryllium	7440-41-7	LA-505-412		0.170	mg/kg			0.99	0.0493		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0985	mg/kg			0.99	0.0985		04/09/10
Chromium	7440-47-3	LA-505-412		3.57	mg/kg			0.99	0.493		04/09/10
Cobalt	7440-48-4	LA-505-412		7.67	mg/kg			0.99	0.0493		04/09/10
Copper	7440-50-8	LA-505-412		12.8	mg/kg			0.99	0.0985		04/09/10
Vanadium	7440-62-2	LA-505-412		47.2	mg/kg			0.99	0.197		04/09/10
Zinc	7440-66-6	LA-505-412		33.8	mg/kg			0.99	0.788		04/09/10
Lead	7439-92-1	LA-505-412		4.47	mg/kg			0.99	0.0985		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0493	mg/kg			0.99	0.0493		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.280	mg/kg			0.99	0.0493		04/09/10
Uranium	7440-61-1	LA-505-412		0.330	mg/kg			0.99	0.0493		04/09/10

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LS
5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00930
Client ID: B23K59 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		1.72	mg/kg			0.99	0.394		04/09/10
Selenium	7782-49-2	LA-505-412		1.13	mg/kg			0.99	0.296		04/09/10
Strontium	7440-24-6	LA-505-412		18.3	mg/kg			0.99	0.0985		04/09/10
Tin	7440-31-5	LA-505-412		0.390	mg/kg			0.99	0.0493		04/09/10

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00931
Client ID: B23K60 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-493~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.93	mg/kg			99.84	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.5	mg/kg			99.84	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	365	mg/kg	J		0.96	0.0958		04/09/10
Nickel	7440-02-0	LA-505-412		5.89	mg/kg			0.96	0.192		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0958	mg/kg			0.96	0.0958		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.287	mg/kg			0.96	0.287		04/09/10
Barium	7440-39-3	LA-505-412		175	mg/kg			0.96	0.192		04/09/10
Beryllium	7440-41-7	LA-505-412		0.200	mg/kg			0.96	0.0479		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0958	mg/kg			0.96	0.0958		04/09/10
Chromium	7440-47-3	LA-505-412		3.30	mg/kg			0.96	0.479		04/09/10
Cobalt	7440-48-4	LA-505-412		8.91	mg/kg			0.96	0.0479		04/09/10
Copper	7440-50-8	LA-505-412		14.0	mg/kg			0.96	0.0958		04/09/10
Vanadium	7440-62-2	LA-505-412		60.9	mg/kg			0.96	0.192		04/09/10
Zinc	7440-66-6	LA-505-412		37.8	mg/kg			0.96	0.766		04/09/10
Lead	7439-92-1	LA-505-412		2.77	mg/kg			0.96	0.0958		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0479	mg/kg			0.96	0.0479		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.390	mg/kg			0.96	0.0479		04/09/10
Uranium	7440-61-1	LA-505-412		0.370	mg/kg			0.96	0.0479		04/09/10

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5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00931
Client ID: B23K60 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		1.75	mg/kg			0.96	0.383		04/09/10
Selenium	7782-49-2	LA-505-412		1.43	mg/kg			0.96	0.287		04/09/10
Strontium	7440-24-6	LA-505-412		19.4	mg/kg			0.96	0.0958		04/09/10
Tin	7440-31-5	LA-505-412		0.430	mg/kg			0.96	0.0479		04/09/10

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RQ=Result Qualifier
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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00932
Client ID: B23K61 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
~~**Hexavalent Chromium Prep**~~											~~**04/08/10**~~
Hexavalent Chromium											
~~Hexavalent Chromium~~	~~18540-29-9~~	~~LA-265-403~~	~~U~~	~~< 0.100~~	~~mg/kg~~			~~1.00~~	~~0.10~~		~~04/08/10~~
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.52	mg/kg			99.44	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.4	mg/kg			99.44	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	252	mg/kg	J		0.83	0.0826		04/09/10
Nickel	7440-02-0	LA-505-412		6.20	mg/kg			0.83	0.165		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0826	mg/kg			0.83	0.0826		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.248	mg/kg			0.83	0.248		04/09/10
Barium	7440-39-3	LA-505-412		48.1	mg/kg			0.83	0.165		04/09/10
Beryllium	7440-41-7	LA-505-412		0.190	mg/kg			0.83	0.0413		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0826	mg/kg			0.83	0.0826		04/09/10
Chromium	7440-47-3	LA-505-412		3.12	mg/kg			0.83	0.413		04/09/10
Cobalt	7440-48-4	LA-505-412		7.67	mg/kg			0.83	0.0413		04/09/10
Copper	7440-50-8	LA-505-412		13.0	mg/kg			0.83	0.0826		04/09/10
Vanadium	7440-62-2	LA-505-412		48.5	mg/kg			0.83	0.165		04/09/10
Zinc	7440-66-6	LA-505-412		36.1	mg/kg			0.83	0.660		04/09/10
Lead	7439-92-1	LA-505-412		2.75	mg/kg			0.83	0.0826		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0413	mg/kg			0.83	0.0413		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.330	mg/kg			0.83	0.0413		04/09/10
Uranium	7440-61-1	LA-505-412		0.380	mg/kg			0.83	0.0413		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

LS
5-03-2010

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00932
Client ID: B23K61 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Arsenic	7440-38-2	LA-505-412		1.62	mg/kg			0.83	0.330		04/09/10
Selenium	7782-49-2	LA-505-412		1.21	mg/kg			0.83	0.248		04/09/10
Strontium	7440-24-6	LA-505-412		19.8	mg/kg			0.83	0.0826		04/09/10
Tin	7440-31-5	LA-505-412		0.420	mg/kg			0.83	0.0413		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

Sample # 100646001
SAF# F10-172
Sample ID B250H2

Matrix WATER
Sampled 04/01/10
Received 04/01/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**04/05/10**
ICP-AES										
Lithium	7439-93-2	LA-505-411	U	<4.0		ug/L	1	4.0	20	04/07/10
Boron	7440-42-8	LA-505-411	U	<19		ug/L	1	19	95	04/07/10
ICPMS Prep										**04/06/10**
ICP-MS										
Manganese	7439-96-5	LA-505-412	BD	1.72		ug/L	10	1.0	10	04/11/10
Nickel	7440-02-0	LA-505-412	UD	<2.0		ug/L	10	2.0	20	04/11/10
Silver	7440-22-4	LA-505-412	UD	<1.0		ug/L	10	1.0	10	04/11/10
Antimony	7440-36-0	LA-505-412	UD	<3.0		ug/L	10	3.0	30	04/11/10
Barium	7440-39-3	LA-505-412	UD	<2.0		ug/L	10	2.0	20	04/11/10
Beryllium	7440-41-7	LA-505-412	UD	<0.50		ug/L	10	0.50	5.0	04/11/10
Cadmium	7440-43-9	LA-505-412	UD	<1.0		ug/L	10	1.0	10	04/11/10
Chromium	7440-47-3	LA-505-412	UD	<5.0		ug/L	10	5.0	50	04/11/10
Cobalt	7440-48-4	LA-505-412	UD	<0.50		ug/L	10	0.50	2.5	04/11/10
Copper	7440-50-8	LA-505-412	UD	<1.0		ug/L	10	1.0	10	04/11/10
Vanadium	7440-62-2	LA-505-412	UD	<2.0		ug/L	10	2.0	20	04/11/10
Zinc	7440-66-6	LA-505-412	BD	9.80		ug/L	10	8.0	50	04/11/10
Lead	7439-92-1	LA-505-412	UD	<1.0		ug/L	10	1.0	10	04/11/10

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

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

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

Sample # 100646001
SAF# F10-172
Sample ID B250H2

Matrix WATER
Sampled 04/01/10
Received 04/01/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Mercury	7439-97-6	LA-505-412	UD	<0.50		ug/L	10	0.50	2.0	04/11/10
Molybdenum	7439-98-7	LA-505-412	UD	<0.50		ug/L	10	0.50	5.0	04/11/10
Strontium	7440-24-6	LA-505-412	UD	<1.0		ug/L	10	1.0	10	04/11/10
Tin	7440-31-5	LA-505-412	UD	<0.50		ug/L	10	0.50	5.0	04/11/10
Uranium	7440-61-1	LA-505-412	UD	<0.50		ug/L	10	0.50	2.0	04/11/10
Arsenic	7440-38-2	LA-505-412	UD	<4.0		ug/L	10	4.0	40	04/11/10
Selenium	7782-49-2	LA-505-412	UD	<3.0		ug/L	10	3.0	30	04/11/10

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

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

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Attachment 2
Narrative
WSCF20100515

Introduction

Nine (9) S&GRP samples were received at the WSCF Laboratory on April 2, 2010. The samples were 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, 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,* pages 11 through 12, 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, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 31 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All QC controls are within the established limits.

ICP-AES 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. See page 32 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)
    - Estimated Boron result due to Iron interference. Sample results are "E" flagged.

All other QC controls are within the established limits.

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. See page 33 through 36 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00943 (B243T7 in work order 20100518)
    - Manganese – Matrix Spike recovery and RPD laboratory limits were exceeded. Affected sample results in this batch were "N" flagged.
- Batch QC analyzed on sample# W10GR00907 no not apply to this Sample Data Group. Due to software constraints this data cannot be removed. Please ignore.

All other 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. See page 47 for QC details. Analytical Note(s):

- Rad Chem requested to be performed included: Gamma Energy Analysis.
- Gamma Energy Analysis: Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All 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 the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Richard Barker 4-21-10
Richard Barker
WSCF Client Services

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-001 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S1	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12-	ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE
20100515

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K53 W10G02D0724	SOIL	APR 01 2010	1340	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall CHPRC	APR 02 2010 / 1300
FM Hall CHPRC	APR 02 2010 / 1345	[illegible]	APR 02 2010 / 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION — RECEIVED BY — TITLE — DATE/TIME

FINAL SAMPLE DISPOSITION — DISPOSAL METHOD — DISPOSED BY — DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-002

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days	**AIR QUALITY** ☐	
SAMPLING LOCATION 100-K-4 Fish Pond; 52	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	
ICE CHEST NO. SAXL-107	**FIELD LOGBOOK NO.** HNF-~~N-507~~-12	**ACTUAL SAMPLE DEPTH** 0-1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE	**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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K54 925	SOIL	APR 01 2010	1350	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Rim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-003

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K55 926	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
FM Hall CHPRC	S.S.U MO-1109 APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345		APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-004 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S3 DUP	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1''	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K56 927	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	SSU MO-1109	APR 01 2010 1500
S.S.U. MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Silva	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-005

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S4	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SAIL - 107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K57 928	SOIL	APR 01 2010	1415	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 /1500	S.S.U MO - 1109	APR 01 2010 /1500
S.S.U MO - 1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sly	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-006

COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	SAMPLING LOCATION: 100-K-4 Fish Pond; D1
PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	ICE CHEST NO.: SML - 107	FIELD LOGBOOK NO.: HNF-~~N-507~~-12-
ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K58 929	SOIL	APR 01 2010	1303	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.UMO - 1109	APR 01 2010 / 1500
S.S.UMO - 1109	APR 02 2010 / 1300	FM Hall CHPRC	APR 02 2010 / 1300
FM Hall CHPRC	APR 02 2010 / 1345	Victor	APR 02 2010 / 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-007 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC

SAMPLING LOCATION: 100-K-4 Fish Pond; D2

ICE CHEST NO.: SML - 107

SHIPPED TO: Waste Sampling & Characterization

COMPANY CONTACT: WIDRIG, DL

TELEPHONE NO.: 376-2858

PROJECT COORDINATOR: WIDRIG, DL

PRICE CODE: 8B

DATA TURNAROUND: 7 Days / 15 Days

AIR QUALITY: ☐

PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil

SAF NO.: F10-082

FIELD LOGBOOK NO.: HNF-N-507-12-

ACTUAL SAMPLE DEPTH: 0-1"

COA: 302451ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K59	930 SOIL	APR 01 2010	1315	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	V. Ray	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

RECEIVED BY | TITLE | DATE/TIME

DISPOSAL METHOD | DISPOSED BY | DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-008 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; D3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K60 931	SOIL	APR 01 2010	1335	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-009

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; D4	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SAAL-107	FIELD LOGBOOK NO.: HNF-N-607-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K61 932	SOIL	4/1/10	1325	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall	APR 02 2010 / 1300
FM Hall	APR 02 2010 / 1345	CHPRC	APR 02 2010 / 1345
CHPRC			

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

Attachment 2
Narrative
WSCF100646

Introduction

One (1) (specify either groundwater or S&GRP) sample was received at the WSCF Laboratory on April 1st, 2010. 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

ICP-AES 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):

- Batch QC 108091 analyzed on sample# B23W01 (100667003)

- Boron was detected in the Blank at a concentration less than the PQL, but equal to the MDL. Boron was not detected in the sample. No flag issued.

All other QC controls are within the established limits.

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):

- Batch QC 108179 analyzed on sample# B24F43 (100609002)
  - Vanadium was detected in the Blank at a concentration less than the PQL, but greater than the MDL. Vanadium sample result not affected. No flag issued.

All other 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):

- Rad Chem requested to be performed included: Gamma Energy Analysis.
- Gamma Energy Analysis:
  - Batch QC 107682 analyzed on sample# B24TF3 (100632001)
  - Cesium-137, Cobalt-60, Europium-152, and Europium-154 – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results below 5X the minimum detectable activity. No flags issued.
  - All other 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.

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-172-001	PAGE 1 OF 1
COLLECTOR: JS Scales CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 7B	DATA TURNAROUND: 7 Days / 15 Days
SAMPLING LOCATION: 100-K-4 Fish Pond; EB	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - QC Sampling		SAF NO.: F10-172	AIR QUALITY: ☐	
ICE CHEST NO.: SML-210	FIELD LOGBOOK NO.: HNF-N-507	ACTUAL SAMPLE DEPTH: 0-2"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
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)

100646

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	HNO3 to pH <2/Cool=4C	HNO3 to pH <2
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	500ml	500ml
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B250H2	WATER	4/1/10	0900	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Scales CHPRC APR 01 2010	0930	L.D.WALL APR 01 2010	0930
L.D.WALL 4/1/10	1020	4/1/10	1020

SPECIAL INSTRUCTIONS

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(1) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; ICP Metals - 6010 (Add-On) {Boron, Lithium};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}.

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Thursday, April 01, 2010 7:21:15 PM
Page 2 of 2

ChemWare

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K RA			DATA PACKAGE: VSR10-015		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 5-03-2010	
			SDG: WSCF20100515 & WSCF100646		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide	EPA 200.8 ICP/MS X	

SAMPLES/MATRIX

SDG WSCF20100515: Soil samples B23K53, B23K54, B23K55, B23K56, B23K57, B23K58, B23K59, B23K60, B23K61

SDG WSCF100646: Water sample B250H2

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

WSCF100646 MB Detects: B 19.0 ug/L, V 0.20 ug/L

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:

WSCF20100515: Mn MS %R = 56%

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

WSCF20100515: Mn MS/MSD RPD = 58%

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments:

8. HOLDING TIMES (all levels)

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

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

Comments: None

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Water CRDLs were not provided in the SAP.

Appendix 6

Additional Documentation Requested By Client

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 03/31/10
Receive Date:04/01/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00907											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Boron	7440-42-8	200.61	100.809	% Recov	75.000	125.000				04/07/10
MS	Lithium	7439-93-2	102.893	103.410	% Recov	70.000	130.000				04/07/10
MSD	Boron	7440-42-8	203.51	102.266	% Recov	75.000	125.000				04/07/10
MSD	Lithium	7439-93-2	110.993	111.551	% Recov	75.000	125.000				04/07/10
SPK-RPD	Boron	7440-42-8	102.266		RPD			1.435	20.000		04/07/10
SPK-RPD	Lithium	7439-93-2	111.551		RPD			7.574	20.000		04/07/10
Lab ID: W10GR00924											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Boron	7440-42-8	209.64	105.347	% Recov	75.000	125.000				04/07/10
MS	Lithium	7439-93-2	109.561	110.112	% Recov	70.000	130.000				04/07/10
MSD	Boron	7440-42-8	195.84	97.920	% Recov	75.000	125.000				04/07/10
MSD	Lithium	7439-93-2	98.661	98.661	% Recov	75.000	125.000				04/07/10
SPK-RPD	Boron	7440-42-8	97.920		RPD			7.308	20.000		04/07/10
SPK-RPD	Lithium	7439-93-2	98.661		RPD			10.970	20.000		04/07/10
BATCH QC											
BLANK	Boron	7440-42-8	<1.9e-2	n/a	ug/mL					U	04/07/10
BLANK	Lithium	7439-93-2	<4e-3	n/a	ug/mL					U	04/07/10
LCS	Boron	7440-42-8	140.3	122.000	% Recov	45.000	156.000				04/07/10
LCS	Lithium	7439-93-2	7.847	92.974	% Recov	80.000	120.000				04/07/10

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 04/02/10
Receive Date:04/02/10

Lab ID: W10GR00943
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	Silver	7440-22-4	90.86	90.860	% Recov	70.000	130.000				04/09/10
MS	Arsenic	7440-38-2	94.62	94.620	% Recov	70.000	130.000				04/09/10
MS	Barium	7440-39-3	92.44	92.440	% Recov	70.000	130.000				04/09/10
MS	Beryllium	7440-41-7	83.28	83.280	% Recov	70.000	130.000				04/09/10
MS	Cadmium	7440-43-9	93.17	93.170	% Recov	70.000	130.000				04/09/10
MS	Cobalt	7440-48-4	83.84	83.840	% Recov	70.000	130.000				04/09/10
MS	Chromium	7440-47-3	84.87	84.870	% Recov	70.000	130.000				04/09/10
MS	Copper	7440-50-8	84.49	84.490	% Recov	70.000	130.000				04/09/10
MS	Mercury	7439-97-6	2.01	100.500	% Recov	70.000	130.000				04/09/10
MS	Manganese	7439-96-5	56.4	56.400	% Recov	70.000	130.000				04/09/10
MS	Molybdenum	7439-98-7	92.71	92.710	% Recov	70.000	130.000				04/09/10
MS	Nickel	7440-02-0	73.75	73.750	% Recov	70.000	130.000				04/09/10
MS	Lead	7439-92-1	96.48	96.480	% Recov	70.000	130.000				04/09/10
MS	Antimony	7440-36-0	86.39	86.390	% Recov	70.000	130.000				04/09/10
MS	Selenium	7782-49-2	95.58	95.580	% Recov	70.000	130.000				04/09/10
MS	Strontium	7440-24-6	94.92	94.920	% Recov	70.000	130.000				04/09/10
MS	Uranium	7440-61-1	92.66	92.660	% Recov	70.000	130.000				04/09/10
MS	Vanadium	7440-62-2	82.17	82.170	% Recov	70.000	130.000				04/09/10
MS	Zinc	7440-66-6	93.7	93.700	% Recov	70.000	130.000				04/09/10
MSD	Silver	7440-22-4	97.82	97.820	% Recov	70.000	130.000				04/09/10
MSD	Arsenic	7440-38-2	102.41	102.410	% Recov	70.000	130.000				04/09/10
MSD	Barium	7440-39-3	106.14	106.140	% Recov	70.000	130.000				04/09/10
MSD	Beryllium	7440-41-7	89.74	89.740	% Recov	70.000	130.000				04/09/10
MSD	Cadmium	7440-43-9	100.5	100.500	% Recov	70.000	130.000				04/09/10
MSD	Cobalt	7440-48-4	91.27	91.270	% Recov	70.000	130.000				04/09/10
MSD	Chromium	7440-47-3	91.86	91.860	% Recov	70.000	130.000				04/09/10

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 04/02/10
Receive Date:04/02/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Copper	7440-50-8	86.69	86.690	% Recov	70.000	130.000				04/09/10
MSD	Mercury	7439-97-6	2.19	109.500	% Recov	70.000	130.000				04/09/10
MSD	Manganese	7439-96-5	102.3	102.300	% Recov	70.000	130.000				04/09/10
MSD	Molybdenum	7439-98-7	100.24	100.240	% Recov	70.000	130.000				04/09/10
MSD	Nickel	7440-02-0	78.65	78.650	% Recov	70.000	130.000				04/09/10
MSD	Lead	7439-92-1	102.68	102.680	% Recov	70.000	130.000				04/09/10
MSD	Antimony	7440-36-0	93.17	93.170	% Recov	70.000	130.000				04/09/10
MSD	Selenium	7782-49-2	101.63	101.630	% Recov	70.000	130.000				04/09/10
MSD	Strontium	7440-24-6	106.22	106.220	% Recov	70.000	130.000				04/09/10
MSD	Uranium	7440-61-1	100.93	100.930	% Recov	70.000	130.000				04/09/10
MSD	Vanadium	7440-62-2	94.47	94.470	% Recov	70.000	130.000				04/09/10
MSD	Zinc	7440-66-6	86.3	86.300	% Recov	70.000	130.000				04/09/10
SPK-RPD	Silver	7440-22-4	97.820		RPD			7.378	20.000		04/09/10
SPK-RPD	Arsenic	7440-38-2	102.410		RPD			7.907	20.000		04/09/10
SPK-RPD	Barium	7440-39-3	106.140		RPD			13.798	20.000		04/09/10
SPK-RPD	Beryllium	7440-41-7	89.740		RPD			7.467	20.000		04/09/10
SPK-RPD	Cadmium	7440-43-9	100.500		RPD			7.570	20.000		04/09/10
SPK-RPD	Cobalt	7440-48-4	91.270		RPD			8.486	20.000		04/09/10
SPK-RPD	Chromium	7440-47-3	91.860		RPD			7.910	20.000		04/09/10
SPK-RPD	Copper	7440-50-8	86.690		RPD			2.570	20.000		04/09/10
SPK-RPD	Mercury	7439-97-6	109.500		RPD			8.571	20.000		04/09/10
SPK-RPD	Manganese	7439-96-5	102.300		RPD			57.845	20.000 *		04/09/10
SPK-RPD	Molybdenum	7439-98-7	100.240		RPD			7.805	20.000		04/09/10
SPK-RPD	Nickel	7440-02-0	78.650		RPD			6.430	20.000		04/09/10
SPK-RPD	Lead	7439-92-1	102.680		RPD			6.226	20.000		04/09/10
SPK-RPD	Antimony	7440-36-0	93.170		RPD			7.552	20.000		04/09/10
SPK-RPD	Selenium	7782-49-2	101.630		RPD			6.136	20.000		04/09/10
SPK-RPD	Strontium	7440-24-6	106.220		RPD			11.236	20.000		04/09/10
SPK-RPD	Uranium	7440-61-1	100.930		RPD			8.544	20.000		04/09/10
SPK-RPD	Vanadium	7440-62-2	94.470		RPD			13.927	20.000		04/09/10

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 04/02/10
Receive Date:04/02/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Zinc	7440-66-6	86.300		RPD			8.222	20.000		04/09/10
BATCH QC											
BLANK	Silver	7440-22-4	<0.1	n/a	ug/L					U	04/09/10
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	04/09/10
BLANK	Barium	7440-39-3	<0.2	n/a	ug/L					U	04/09/10
BLANK	Beryllium	7440-41-7	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Cadmium	7440-43-9	<0.1	n/a	ug/L					U	04/09/10
BLANK	Cobalt	7440-48-4	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Chromium	7440-47-3	<0.5	n/a	ug/L					U	04/09/10
BLANK	Copper	7440-50-8	<0.1	n/a	ug/L					U	04/09/10
BLANK	Mercury	7439-97-6	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Manganese	7439-96-5	<0.1	n/a	ug/L					U	04/09/10
BLANK	Molybdenum	7439-98-7	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Nickel	7440-02-0	<0.2	n/a	ug/L					U	04/09/10
BLANK	Lead	7439-92-1	<0.1	n/a	ug/L					U	04/09/10
BLANK	Antimony	7440-36-0	<0.3	n/a	ug/L					U	04/09/10
BLANK	Selenium	7782-49-2	<0.3	n/a	ug/L					U	04/09/10
BLANK	Tin	7440-31-5	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Strontium	7440-24-6	<0.1	n/a	ug/L					U	04/09/10
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	04/09/10
BLANK	Vanadium	7440-62-2	<0.2	n/a	ug/L					U	04/09/10
BLANK	Zinc	7440-66-6	<0.8	n/a	ug/L					U	04/09/10
LCS	Silver	7440-22-4	97.48	96.515	% Recov	81.000	128.000				04/09/10
LCS	Arsenic	7440-38-2	131.1	99.318	% Recov	78.000	124.000				04/09/10
LCS	Barium	7440-39-3	298.7	93.636	% Recov	77.000	119.000				04/09/10
LCS	Beryllium	7440-41-7	86.11	96.212	% Recov	78.000	118.000				04/09/10
LCS	Cadmium	7440-43-9	66.05	99.323	% Recov	75.000	127.000				04/09/10
LCS	Cobalt	7440-48-4	68.5	93.707	% Recov	75.000	124.000				04/09/10
LCS	Chromium	7440-47-3	64.2	88.066	% Recov	67.000	119.000				04/09/10

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Copper	7440-50-8	59.62	87.036	% Recov	68.000	122.000				04/09/10
LCS	Mercury	7439-97-6	7.36	88.889	% Recov	72.000	117.000				04/09/10
LCS	Manganese	7439-96-5	424	93.598	% Recov	72.000	123.000				04/09/10
LCS	Molybdenum	7439-98-7	48.14	98.850	% Recov	80.000	125.000				04/09/10
LCS	Nickel	7440-02-0	51.21	92.104	% Recov	73.000	123.000				04/09/10
LCS	Lead	7439-92-1	122.6	94.308	% Recov	77.000	125.000				04/09/10
LCS	Antimony	7440-36-0	123.6	137.029	% Recov	65.000	203.000				04/09/10
LCS	Selenium	7782-49-2	171.3	106.398	% Recov	82.000	129.000				04/09/10
LCS	Tin	7440-31-5	174.6	100.925	% Recov	83.000	127.000				04/09/10
LCS	Strontium	7440-24-6	51.06	93.860	% Recov	77.000	118.000				04/09/10
LCS	Uranium	7440-61-1	386.7	96.675	% Recov	84.000	110.000				04/09/10
LCS	Vanadium	7440-62-2	75.99	91.554	% Recov	65.000	122.000				04/09/10
LCS	Zinc	7440-66-6	173.3	97.910	% Recov	75.000	130.000				04/09/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

QC Batch 108091
Associated Samples 100646001

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #26173**							
Lithium	7439-93-2		<4.0	ug/L					U	04/07/10
Boron	7440-42-8		19.0	ug/L					B	04/07/10
LCS			**QC Sample #26174**							
Lithium	7439-93-2		512	ug/L	102.4	80 - 120				04/07/10
Boron	7440-42-8		982	ug/L	98.2	80 - 120				04/07/10
MS			**QC Sample #26175**							
			Original 100667003							
Lithium	7439-93-2		547	ug/L	109.4	75 - 125				04/07/10
Boron	7440-42-8		1030	ug/L	102.9	75 - 125				04/07/10
MSD			**QC Sample #26176**							
			Original 100667003					**Paired**	**26175**	
Lithium	7439-93-2		536	ug/L	107.3	75 - 125	1.90	20		04/07/10
Boron	7440-42-8		999	ug/L	99.9	75 - 125	3.00	20		04/07/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

QC Batch 108179
Associated Samples 100646001

Test ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #26265**							
Manganese	7439-96-5		<0.10	ug/L					U	04/11/10
Nickel	7440-02-0		<0.20	ug/L					U	04/11/10
Silver	7440-22-4		<0.10	ug/L					U	04/11/10
Antimony	7440-36-0		<0.30	ug/L					U	04/11/10
Barium	7440-39-3		<0.20	ug/L					U	04/11/10
Beryllium	7440-41-7		<0.050	ug/L					U	04/11/10
Cadmium	7440-43-9		<0.10	ug/L					U	04/11/10
Chromium	7440-47-3		<0.50	ug/L					U	04/11/10
Cobalt	7440-48-4		<0.050	ug/L					U	04/11/10
Copper	7440-50-8		<0.10	ug/L					U	04/11/10
Vanadium	7440-62-2		0.200	ug/L					B	04/11/10
Zinc	7440-66-6		<0.80	ug/L					U	04/11/10
Lead	7439-92-1		<0.10	ug/L					U	04/11/10
Mercury	7439-97-6		<0.050	ug/L					U	04/11/10
Molybdenum	7439-98-7		<0.050	ug/L					U	04/11/10
Strontium	7440-24-6		<0.10	ug/L					U	04/11/10
Tin	7440-31-5		<0.050	ug/L					U	04/11/10
Uranium	7440-61-1		<0.050	ug/L					U	04/11/10
Arsenic	7440-38-2		<0.40	ug/L					U	04/11/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Selenium	7782-49-2		<0.30	ug/L					U	04/11/10
LCS			**QC Sample #26266**							
Manganese	7439-96-5		40.4	ug/L	101	85 - 115				04/11/10
Nickel	7440-02-0		38.0	ug/L	94.9	85 - 115				04/11/10
Silver	7440-22-4		39.2	ug/L	98	85 - 115				04/11/10
Antimony	7440-36-0		39.8	ug/L	99.6	85 - 115				04/11/10
Barium	7440-39-3		40.8	ug/L	101.9	85 - 115				04/11/10
Beryllium	7440-41-7		36.8	ug/L	91.9	85 - 115				04/11/10
Cadmium	7440-43-9		38.4	ug/L	96.1	85 - 115				04/11/10
Chromium	7440-47-3		39.0	ug/L	97.4	85 - 115				04/11/10
Cobalt	7440-48-4		38.2	ug/L	95.6	85 - 115				04/11/10
Copper	7440-50-8		37.2	ug/L	92.9	85 - 115				04/11/10
Vanadium	7440-62-2		39.6	ug/L	98.9	85 - 115				04/11/10
Zinc	7440-66-6		35.9	ug/L	89.7	85 - 115				04/11/10
Lead	7439-92-1		41.7	ug/L	104.3	85 - 115				04/11/10
Mercury	7439-97-6		1.85	ug/L	92.4	85 - 115				04/11/10
Molybdenum	7439-98-7		38.8	ug/L	97.1	85 - 115				04/11/10
Strontium	7440-24-6		41.8	ug/L	104.6	85 - 115				04/11/10
Tin	7440-31-5		39.8	ug/L	99.4	85 - 115				04/11/10
Uranium	7440-61-1		41.2	ug/L	103.1	85 - 115				04/11/10
Arsenic	7440-38-2		38.1	ug/L	95.2	85 - 115				04/11/10
Selenium	7782-49-2		38.4	ug/L	96	85 - 115				04/11/10
MS			**QC Sample #26267**							
			Original	**100609002**						

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Manganese	7439-96-5		38.5	ug/L	96.4	70 - 130				04/11/10
Nickel	7440-02-0		35.2	ug/L	87.9	70 - 130				04/11/10
Silver	7440-22-4		36.3	ug/L	90.8	70 - 130				04/11/10
Antimony	7440-36-0		41.2	ug/L	102.9	70 - 130				04/11/10
Barium	7440-39-3		40.5	ug/L	101.3	70 - 130				04/11/10
Beryllium	7440-41-7		35.5	ug/L	88.8	70 - 130				04/11/10
Cadmium	7440-43-9		37.0	ug/L	92.6	70 - 130				04/11/10
Chromium	7440-47-3		37.5	ug/L	93.9	70 - 130				04/11/10
Cobalt	7440-48-4		35.9	ug/L	89.7	70 - 130				04/11/10
Copper	7440-50-8		33.6	ug/L	84.1	70 - 130				04/11/10
Vanadium	7440-62-2		39.5	ug/L	98.8	70 - 130				04/11/10
Zinc	7440-66-6		33.3	ug/L	83.2	70 - 130				04/11/10
Lead	7439-92-1		42.4	ug/L	106	70 - 130				04/11/10
Mercury	7439-97-6		2.10	ug/L	104.8	70 - 130				04/11/10
Molybdenum	7439-98-7		40.7	ug/L	101.7	70 - 130				04/11/10
Strontium	7440-24-6		42.0	ug/L	105	70 - 130				04/11/10
Tin	7440-31-5		40.4	ug/L	101.1	70 - 130				04/11/10
Uranium	7440-61-1		44.4	ug/L	111	70 - 130				04/11/10
Arsenic	7440-38-2		38.3	ug/L	95.7	70 - 130				04/11/10
Selenium	7782-49-2		36.3	ug/L	90.8	70 - 130				04/11/10
MSD			**QC Sample #26268**							
			Original 100609002						**Paired 26267**	
Manganese	7439-96-5		39.2	ug/L	98.1	70 - 130	1.70	20		04/11/10
Nickel	7440-02-0		35.5	ug/L	88.8	70 - 130	1.00	20		04/11/10
Silver	7440-22-4		36.6	ug/L	91.6	70 - 130	0.90	20		04/11/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100646

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Antimony	7440-36-0		41.4	ug/L	103.5	70 - 130	0.60	20		04/11/10
Barium	7440-39-3		39.7	ug/L	99.2	70 - 130	2.10	20		04/11/10
Beryllium	7440-41-7		36.3	ug/L	90.7	70 - 130	2.10	20		04/11/10
Cadmium	7440-43-9		37.5	ug/L	93.8	70 - 130	1.30	20		04/11/10
Chromium	7440-47-3		38.2	ug/L	95.4	70 - 130	1.60	20		04/11/10
Cobalt	7440-48-4		36.4	ug/L	90.9	70 - 130	1.30	20		04/11/10
Copper	7440-50-8		34.1	ug/L	85.4	70 - 130	1.50	20		04/11/10
Vanadium	7440-62-2		39.8	ug/L	99.6	70 - 130	0.80	20		04/11/10
Zinc	7440-66-6		33.9	ug/L	84.7	70 - 130	1.80	20		04/11/10
Lead	7439-92-1		42.4	ug/L	106	70 - 130	0.00	20		04/11/10
Mercury	7439-97-6		2.03	ug/L	101.6	70 - 130	3.10	20		04/11/10
Molybdenum	7439-98-7		41.1	ug/L	102.8	70 - 130	1.10	20		04/11/10
Strontium	7440-24-6		39.6	ug/L	99	70 - 130	5.90	20		04/11/10
Tin	7440-31-5		41.0	ug/L	102.4	70 - 130	1.30	20		04/11/10
Uranium	7440-61-1		43.9	ug/L	109.6	70 - 130	1.30	20		04/11/10
Arsenic	7440-38-2		38.9	ug/L	97.2	70 - 130	1.60	20		04/11/10
Selenium	7782-49-2		38.2	ug/L	95.5	70 - 130	5.00	20		04/11/10

Date: 3 May 2010
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K RA
Subject: General Chemistry - Sample Data Groups (SDGs) WSCF20100515 and WSCF100645

INTRODUCTION

This memorandum presents the results of data validation for SDGs WSCF20100515 and WSCF100645 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
B23K53	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K54	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K55	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K56	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K57	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K58	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K59	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K60	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B23K61	4/01/2010	Soil	C	7196 (Hexavalent Cr)
B250H6	4/01/2010	Water	C	7196 (Hexavalent Cr)

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 analysis within 30 days of sample collection for soils, and analysis within 24 hours of sample collection for water. Sample preservation 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.

Trip Blanks

No trip blanks were submitted for analysis.

Field Blanks

No field blanks were submitted for analysis.

Equipment Blanks

The equipment blank result was acceptable.

- **Accuracy**

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

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

All MS/MSD recoveries were acceptable.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, 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 ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs for soils exceed the limits and have associated results <5X the SAP required detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <2X the required detection limits no precision infraction occurred. When

duplicate RPDs for waters exceed the limits and have associated results <5X the required SAP detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <1X the required detection limits no precision infraction occurred.

MS/MSD Samples

The MS/MSD RPD value was acceptable.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Field Split Samples

No field splits were submitted for analysis.

- **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 soil sample MDLs were below the CRDL. It should be noted that a water sample CRDL was not provided in the SAP.

- **Completeness**

SDGs WSCF20100515 and WSCF100645 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

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses*, June 2004.

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 MDL. 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.

- **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: WSCF20100515 & WSCF100645	Reviewer: AQA	Project: 100-K RA	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Cr(VI)	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00924
Client ID: B23K53 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		7.94	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.8	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	311	mg/kg			0.87	0.0866		04/09/10
Nickel	7440-02-0	LA-505-412		8.19	mg/kg			0.87	0.173		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0866	mg/kg			0.87	0.0866		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.260	mg/kg			0.87	0.260		04/09/10
Barium	7440-39-3	LA-505-412		57.7	mg/kg			0.87	0.173		04/09/10
Beryllium	7440-41-7	LA-505-412		0.250	mg/kg			0.87	0.0433		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0866	mg/kg			0.87	0.0866		04/09/10
Chromium	7440-47-3	LA-505-412		6.46	mg/kg			0.87	0.433		04/09/10
Cobalt	7440-48-4	LA-505-412		8.55	mg/kg			0.87	0.0433		04/09/10
Copper	7440-50-8	LA-505-412		14.7	mg/kg			0.87	0.0866		04/09/10
Vanadium	7440-62-2	LA-505-412		52.0	mg/kg			0.87	0.173		04/09/10
Zinc	7440-66-6	LA-505-412		41.3	mg/kg			0.87	0.693		04/09/10
Lead	7439-92-1	LA-505-412		5.92	mg/kg			0.87	0.0866		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0433	mg/kg		<S 5-03-2010	0.87	0.0433		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.420	mg/kg			0.87	0.0433		04/09/10
Uranium	7440-61-1	LA-505-412		0.420	mg/kg			0.87	0.0433		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00925
Client ID: B23K54 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
~~**ICP Metals Analysis, Grd H20 P Prep**~~											~~**04/06/10**~~
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		6.73	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.7	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	289	mg/kg			0.97	0.0973		04/09/10
Nickel	7440-02-0	LA-505-412		7.38	mg/kg			0.97	0.195		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0973	mg/kg			0.97	0.0973		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.292	mg/kg			0.97	0.292		04/09/10
Barium	7440-39-3	LA-505-412		45.4	mg/kg			0.97	0.195		04/09/10
Beryllium	7440-41-7	LA-505-412		0.210	mg/kg			0.97	0.0486		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0973	mg/kg			0.97	0.0973		04/09/10
Chromium	7440-47-3	LA-505-412		5.37	mg/kg			0.97	0.486		04/09/10
Cobalt	7440-48-4	LA-505-412		8.29	mg/kg			0.97	0.0486		04/09/10
Copper	7440-50-8	LA-505-412		14.2	mg/kg			0.97	0.0973		04/09/10
Vanadium	7440-62-2	LA-505-412		56.2	mg/kg			0.97	0.195		04/09/10
Zinc	7440-66-6	LA-505-412		39.4	mg/kg			0.97	0.778		04/09/10
Lead	7439-92-1	LA-505-412		3.82	mg/kg			0.97	0.0973		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0486	mg/kg		<5	0.97	0.0486		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg		5-03-2010	0.97	0.0486		04/09/10
Uranium	7440-61-1	LA-505-412		0.550	mg/kg			0.97	0.0486		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

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U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00926
Client ID: B23K55 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		9.24	mg/kg			99.48	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	13.8	mg/kg			99.48	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	313	mg/kg			0.99	0.0988		04/09/10
Nickel	7440-02-0	LA-505-412		10.7	mg/kg			0.99	0.198		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0988	mg/kg			0.99	0.0988		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.296	mg/kg			0.99	0.296		04/09/10
Barium	7440-39-3	LA-505-412		66.6	mg/kg			0.99	0.198		04/09/10
Beryllium	7440-41-7	LA-505-412		0.190	mg/kg			0.99	0.0494		04/09/10
Cadmium	7440-43-9	LA-505-412		0.120	mg/kg			0.99	0.0988		04/09/10
Chromium	7440-47-3	LA-505-412		9.63	mg/kg			0.99	0.494		04/09/10
Cobalt	7440-48-4	LA-505-412		7.32	mg/kg			0.99	0.0494		04/09/10
Copper	7440-50-8	LA-505-412		14.6	mg/kg			0.99	0.0988		04/09/10
Vanadium	7440-62-2	LA-505-412		45.1	mg/kg			0.99	0.198		04/09/10
Zinc	7440-66-6	LA-505-412		56.1	mg/kg			0.99	0.790		04/09/10
Lead	7439-92-1	LA-505-412		8.17	mg/kg			0.99	0.0988		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0494	mg/kg		LS	0.99	0.0494		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg		5-03-2010	0.99	0.0494		04/09/10
Uranium	7440-61-1	LA-505-412		0.560	mg/kg			0.99	0.0494		04/09/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
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DF=Dilution Factor

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U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00927
Client ID: B23K56 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		10.7	mg/kg			99.54	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.8	mg/kg			99.54	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	310	mg/kg			0.99	0.0991		04/09/10
Nickel	7440-02-0	LA-505-412		10.5	mg/kg			0.99	0.198		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0990	mg/kg			0.99	0.0991		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.297	mg/kg			0.99	0.297		04/09/10
Barium	7440-39-3	LA-505-412		73.5	mg/kg			0.99	0.198		04/09/10
Beryllium	7440-41-7	LA-505-412		0.220	mg/kg			0.99	0.0495		04/09/10
Cadmium	7440-43-9	LA-505-412		0.120	mg/kg			0.99	0.0991		04/09/10
Chromium	7440-47-3	LA-505-412		10.2	mg/kg			0.99	0.495		04/09/10
Cobalt	7440-48-4	LA-505-412		6.95	mg/kg			0.99	0.0495		04/09/10
Copper	7440-50-8	LA-505-412		14.9	mg/kg			0.99	0.0991		04/09/10
Vanadium	7440-62-2	LA-505-412		40.7	mg/kg			0.99	0.198		04/09/10
Zinc	7440-66-6	LA-505-412		56.3	mg/kg			0.99	0.792		04/09/10
Lead	7439-92-1	LA-505-412		9.04	mg/kg			0.99	0.0991		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0495	mg/kg		LS	0.99	0.0495		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.340	mg/kg		5-03-2010	0.99	0.0495		04/09/10
Uranium	7440-61-1	LA-505-412		0.650	mg/kg			0.99	0.0495		04/09/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00928
Client ID: B23K57 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
ICP Metals Analysis, Grd H20 P Prep											**04/06/10**
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		7.55	mg/kg			99.92	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.3	mg/kg			99.92	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	292	mg/kg			0.96	0.0962		04/09/10
Nickel	7440-02-0	LA-505-412		9.49	mg/kg			0.96	0.192		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0962	mg/kg			0.96	0.0962		04/09/10
Antimony	7440-36-0	LA-505-412		0.320	mg/kg			0.96	0.289		04/09/10
Barium	7440-39-3	LA-505-412		60.0	mg/kg			0.96	0.192		04/09/10
Beryllium	7440-41-7	LA-505-412		0.110	mg/kg			0.96	0.0481		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0962	mg/kg			0.96	0.0962		04/09/10
Chromium	7440-47-3	LA-505-412		8.64	mg/kg			0.96	0.481		04/09/10
Cobalt	7440-48-4	LA-505-412		7.81	mg/kg			0.96	0.0481		04/09/10
Copper	7440-50-8	LA-505-412		15.0	mg/kg			0.96	0.0962		04/09/10
Vanadium	7440-62-2	LA-505-412		47.6	mg/kg			0.96	0.192		04/09/10
Zinc	7440-66-6	LA-505-412		50.5	mg/kg			0.96	0.770		04/09/10
Lead	7439-92-1	LA-505-412		13.9	mg/kg			0.96	0.0962		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0481	mg/kg		<5	0.96	0.0481		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.490	mg/kg		5-03-2010	0.96	0.0481		04/09/10
Uranium	7440-61-1	LA-505-412		0.440	mg/kg			0.96	0.0481		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00929
Client ID: B23K58 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
~~**ICP Metals Analysis, Grd H20 P Prep**~~											~~**04/06/10**~~
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.44	mg/kg			99.50	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.9	mg/kg			99.50	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	270	mg/kg			0.93	0.0926		04/09/10
Nickel	7440-02-0	LA-505-412		6.44	mg/kg			0.93	0.185		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0926	mg/kg			0.93	0.0926		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.278	mg/kg			0.93	0.278		04/09/10
Barium	7440-39-3	LA-505-412		51.7	mg/kg			0.93	0.185		04/09/10
Beryllium	7440-41-7	LA-505-412		0.160	mg/kg			0.93	0.0463		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0926	mg/kg			0.93	0.0926		04/09/10
Chromium	7440-47-3	LA-505-412		3.53	mg/kg			0.93	0.463		04/09/10
Cobalt	7440-48-4	LA-505-412		8.08	mg/kg			0.93	0.0463		04/09/10
Copper	7440-50-8	LA-505-412		13.7	mg/kg			0.93	0.0926		04/09/10
Vanadium	7440-62-2	LA-505-412		50.6	mg/kg			0.93	0.185		04/09/10
Zinc	7440-66-6	LA-505-412		37.0	mg/kg			0.93	0.741		04/09/10
Lead	7439-92-1	LA-505-412		2.93	mg/kg			0.93	0.0926		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0463	mg/kg		LS	0.93	0.0463		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.330	mg/kg		5-03-2010	0.93	0.0463		04/09/10
Uranium	7440-61-1	LA-505-412		1.03	mg/kg			0.93	0.0463		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00930
Client ID: B23K59 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
~~**ICP Metals Analysis, Grd H20 P Prep**~~											~~**04/06/10**~~
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		5.13	mg/kg			1.00e+002	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	17.7	mg/kg			1.00e+002	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	294	mg/kg			0.99	0.0985		04/09/10
Nickel	7440-02-0	LA-505-412		5.96	mg/kg			0.99	0.197		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0985	mg/kg			0.99	0.0985		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.296	mg/kg			0.99	0.296		04/09/10
Barium	7440-39-3	LA-505-412		57.6	mg/kg			0.99	0.197		04/09/10
Beryllium	7440-41-7	LA-505-412		0.170	mg/kg			0.99	0.0493		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0985	mg/kg			0.99	0.0985		04/09/10
Chromium	7440-47-3	LA-505-412		3.57	mg/kg			0.99	0.493		04/09/10
Cobalt	7440-48-4	LA-505-412		7.67	mg/kg			0.99	0.0493		04/09/10
Copper	7440-50-8	LA-505-412		12.8	mg/kg			0.99	0.0985		04/09/10
Vanadium	7440-62-2	LA-505-412		47.2	mg/kg			0.99	0.197		04/09/10
Zinc	7440-66-6	LA-505-412		33.8	mg/kg			0.99	0.788		04/09/10
Lead	7439-92-1	LA-505-412		4.47	mg/kg			0.99	0.0985		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0493	mg/kg		<5	0.99	0.0493		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.280	mg/kg		5-03-2010	0.99	0.0493		04/09/10
~~Uranium~~	~~7440-61-1~~	~~LA-505-412~~		~~0.330~~	~~mg/kg~~			~~0.99~~	~~0.0493~~		~~04/09/10~~

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00931
Client ID: B23K60 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
~~**ICP Metals Analysis, Grd H20 P Prep**~~											~~**04/06/10**~~
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.93	mg/kg			99.84	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	16.5	mg/kg			99.84	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	365	mg/kg			0.96	0.0958		04/09/10
Nickel	7440-02-0	LA-505-412		5.89	mg/kg			0.96	0.192		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0958	mg/kg			0.96	0.0958		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.287	mg/kg			0.96	0.287		04/09/10
Barium	7440-39-3	LA-505-412		175	mg/kg			0.96	0.192		04/09/10
Beryllium	7440-41-7	LA-505-412		0.200	mg/kg			0.96	0.0479		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0958	mg/kg			0.96	0.0958		04/09/10
Chromium	7440-47-3	LA-505-412		3.30	mg/kg			0.96	0.479		04/09/10
Cobalt	7440-48-4	LA-505-412		8.91	mg/kg			0.96	0.0479		04/09/10
Copper	7440-50-8	LA-505-412		14.0	mg/kg			0.96	0.0958		04/09/10
Vanadium	7440-62-2	LA-505-412		60.9	mg/kg			0.96	0.192		04/09/10
Zinc	7440-66-6	LA-505-412		37.8	mg/kg			0.96	0.766		04/09/10
Lead	7439-92-1	LA-505-412		2.77	mg/kg			0.96	0.0958		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0479	mg/kg		LS	0.96	0.0479		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.390	mg/kg		5-03-2010	0.96	0.0479		04/09/10
Uranium	7440-61-1	LA-505-412		0.370	mg/kg			0.96	0.0479		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00932
Client ID: B23K61 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Inorganic
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium Prep											**04/08/10**
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 0.100	mg/kg			1.00	0.10		04/08/10
~~**ICP Metals Analysis, Grd H20 P Prep**~~											~~**04/06/10**~~
ICP Metals Analysis, Grd H20 P											
Lithium	7439-93-2	LA-505-411		4.52	mg/kg			99.44	0.40		04/07/10
Boron	7440-42-8	LA-505-411	E	15.4	mg/kg			99.44	1.9		04/07/10
ICP-200.8 MS All possible meta Prep											**04/06/10**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412	N	252	mg/kg			0.83	0.0826		04/09/10
Nickel	7440-02-0	LA-505-412		6.20	mg/kg			0.83	0.165		04/09/10
Silver	7440-22-4	LA-505-412	U	< 0.0826	mg/kg			0.83	0.0826		04/09/10
Antimony	7440-36-0	LA-505-412	U	< 0.248	mg/kg			0.83	0.248		04/09/10
Barium	7440-39-3	LA-505-412		48.1	mg/kg			0.83	0.165		04/09/10
Beryllium	7440-41-7	LA-505-412		0.190	mg/kg			0.83	0.0413		04/09/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0826	mg/kg			0.83	0.0826		04/09/10
Chromium	7440-47-3	LA-505-412		3.12	mg/kg			0.83	0.413		04/09/10
Cobalt	7440-48-4	LA-505-412		7.67	mg/kg			0.83	0.0413		04/09/10
Copper	7440-50-8	LA-505-412		13.0	mg/kg			0.83	0.0826		04/09/10
Vanadium	7440-62-2	LA-505-412		48.5	mg/kg			0.83	0.165		04/09/10
Zinc	7440-66-6	LA-505-412		36.1	mg/kg			0.83	0.660		04/09/10
Lead	7439-92-1	LA-505-412		2.75	mg/kg			0.83	0.0826		04/09/10
Mercury	7439-97-6	LA-505-412	U	< 0.0413	mg/kg		LS	0.83	0.0413		04/09/10
Molybdenum	7439-98-7	LA-505-412		0.330	mg/kg		5-03-2010	0.83	0.0413		04/09/10
Uranium	7440-61-1	LA-505-412		0.380	mg/kg			0.83	0.0413		04/09/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100645

Sample # 100645001
SAF# F10-172
Sample ID B250H6

Matrix WATER
Sampled 04/01/10
Received 04/01/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI)										**04/01/10**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	04/01/10

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

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

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Attachment 2
Narrative
WSCF20100515

Introduction

Nine (9) S&GRP samples were received at the WSCF Laboratory on April 2, 2010. The samples were 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, 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,* pages 11 through 12, 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, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 31 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All QC controls are within the established limits.

ICP-AES 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. See page 32 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)
    - Estimated Boron result due to Iron interference. Sample results are "E" flagged.

All other QC controls are within the established limits.

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. See page 33 through 36 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00943 (B243T7 in work order 20100518)
    - Manganese – Matrix Spike recovery and RPD laboratory limits were exceeded. Affected sample results in this batch were "N" flagged.
- Batch QC analyzed on sample# W10GR00907 no not apply to this Sample Data Group. Due to software constraints this data cannot be removed. Please ignore.

All other 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. See page 47 for QC details. Analytical Note(s):

- Rad Chem requested to be performed included: Gamma Energy Analysis.
- Gamma Energy Analysis: Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All 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 the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Richard Barker 4-21-10
Richard Barker
WSCF Client Services

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-001 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days
SAMPLING LOCATION: 100-K-4 Fish Pond; S1	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil		SAF NO.: F10-082	AIR QUALITY: ☐	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12-	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
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)

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SPECIAL HANDLING AND/OR STORAGE: 20100515

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K53 W10GR20924	SOIL	APR 01 2010	1340	✓	✓	✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall CHPRC	APR 02 2010 / 1300
FM Hall CHPRC	APR 02 2010 / 1345	Victor Diaz	APR 02 2010 / 1345

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-002

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days		
SAMPLING LOCATION 100-K-4 Fish Pond; 52	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	**AIR QUALITY** ☐
ICE CHEST NO. SAXL-107	**FIELD LOGBOOK NO.** HNF-~~N-507~~-12-	**ACTUAL SAMPLE DEPTH** 0-1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K54 925	SOIL	APR 01 2010	1350	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Rim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-003

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K55 926	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
FM Hall CHPRC	S.S.U MO-1109 APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345		APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-004 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S3 DUP	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1''	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K56 927	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	SSU MO-1109	APR 01 2010 1500
S.S.U. MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Silva	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-005

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days		
SAMPLING LOCATION 100-K-4 Fish Pond; S4	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil		**SAF NO.** F10-082
AIR QUALITY ☐			
ICE CHEST NO. SAIL - 107	**FIELD LOGBOOK NO.** HNF-N-507-12	**ACTUAL SAMPLE DEPTH** 0 - 1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K57 928	SOIL	APR 01 2010	1415	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 /1500	S.S.U MO - 1109	APR 01 2010 /1500
S.S.U MO - 1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sly	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-006

COLLECTOR: FM Hall, CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	SAMPLING LOCATION: 100-K-4 Fish Pond; D1
PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	ICE CHEST NO.: SML - 107	FIELD LOGBOOK NO.: HNF-~~N-507~~-12-
ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K58 929	SOIL	APR 01 2010	1303	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.UMO - 1109	APR 01 2010 / 1500
S.S.UMO - 1109	APR 02 2010 / 1300	FM Hall CHPRC	APR 02 2010 / 1300
FM Hall CHPRC	APR 02 2010 / 1345		APR 02 2010 / 1345

SPECIAL INSTRUCTIONS

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(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-007 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC

SAMPLING LOCATION: 100-K-4 Fish Pond; D2

ICE CHEST NO.: SML - 107

SHIPPED TO: Waste Sampling & Characterization

COMPANY CONTACT: WIDRIG, DL

TELEPHONE NO.: 376-2858

PROJECT COORDINATOR: WIDRIG, DL

PRICE CODE: 8B

DATA TURNAROUND: 7 Days / 15 Days

AIR QUALITY: ☐

PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil

SAF NO.: F10-082

FIELD LOGBOOK NO.: HNF-N-507-12-

ACTUAL SAMPLE DEPTH: 0-1"

COA: 302451ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K59	930 SOIL	APR 01 2010	1315	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	V. Ray	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION

RECEIVED BY | **TITLE** | **DATE/TIME**

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD | **DISPOSED BY** | **DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-008 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; D3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K60 931	SOIL	APR 01 2010	1335	✓	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

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(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-009

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days		
SAMPLING LOCATION 100-K-4 Fish Pond; D4	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	**AIR QUALITY** ☐
ICE CHEST NO. SAAL-107	**FIELD LOGBOOK NO.** HNF-~~N-607~~-12	**ACTUAL SAMPLE DEPTH** 0-1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K61 932	SOIL	4/1/10	1325	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall	APR 02 2010 / 1300
FM Hall	APR 02 2010 / 1345	CHPRC	APR 02 2010 / 1345
CHPRC			

SPECIAL INSTRUCTIONS

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(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

Attachment 2
Narrative
WSCF100645

Introduction

One (1) S&GRP sample was received at the WSCF Laboratory on April 1st, 2010. 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, 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,* pages 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):

All QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF100645

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.

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-172-003

PAGE 1 OF 1

COLLECTOR: JS Scales CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
SAMPLING LOCATION: 100-K-4 Fish Pond; EB	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - QC Sampling		SAF NO.: F10-172
ICE CHEST NO.: SML-210	FIELD LOGBOOK NO.: HNF-N-507	ACTUAL SAMPLE DEPTH: 0-2"	COA: 302451ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: 1A

AIR QUALITY: ☐

DATA TURNAROUND: 24 Hours / 15 Days

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

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)

100645

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	24 Hours
TYPE OF CONTAINER	BG
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	Chromium Hex - 7196

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B250H6	WATER	4/1/10	0900 ✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Scales CHPRC	APR 01 2010 0930	LDWall LDWall	APR 01 2010 0930
LDWall LDWall	4/1/10 1020	[illegible]	4/1/10 1020

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Thursday, April 01, 2010 7:20:39 PM

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ChemVare

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K RA			DATA PACKAGE: VSR10-015		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 5-03-2010	
			SDG: WSCF20100515 & WSCF100645		
ANALYSES PERFORMED					
Anions/IC	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	Total CN	Sulfide

SAMPLES/MATRIX

SDG WSCF20100515: Soil samples B23K53, B23K54, B23K55, B23K56, B23K57, B23K58, B23K59, B23K60, B23K61

SDG WSCF100645: Water sample B250H6

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

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:

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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: None

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

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Sike 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: None

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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:

Water CRDLs were not provided in the SAP.

Appendix 6

Additional Documentation Requested By Client

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100515
Matrix: SOLID
Test: Hexavalent chromium

Sample Date: 04/01/10
Receive Date:04/02/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00924											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Hexavalent chromium	18540-29-9	< 0.10		RPD			n/a	15.000	U	04/08/10
MS	Hexavalent chromium	18540-29-9	260	81.250	% Recov	75.000	125.000				04/08/10
MS	Hexavalent chromium	18540-29-9	17.0	86.294	% Recov	75.000	125.000				04/08/10
MSD	Hexavalent chromium	18540-29-9	17.1	86.802	% Recov	75.000	125.000				04/08/10
SPK-POST	Hexavalent chromium	18540-29-9	0.0572	107.519	% Recov	75.000	125.000				04/08/10
SPK-RPD	Hexavalent chromium	18540-29-9	86.802		RPD			0.587	20.000		04/08/10
BATCH QC											
BLNK-PREP	Hexavalent chromium	18540-29-9	< 0.10	n/a	ug/g	0.000	2.000			U	04/08/10
LCS	Hexavalent chromium	18540-29-9	18.0	94.737	% Recov	80.000	120.000				04/08/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100645

QC Batch 107778
Associated Samples 100645001

Test Hexavalent chromium Discrete Analyzer

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #26118**							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	04/01/10
LCS			**QC Sample #26120**							
Hexavalent chromium	18540-29-9		0.0506	mg/L	101.2	90 - 110				04/01/10
DUP			**QC Sample #26121**							
			Original 100645001							
Hexavalent chromium	18540-29-9	<0.0020	<0.0020	mg/L			-5.90	20	U	04/01/10
MS			**QC Sample #26122**							
			Original 100645001							
Hexavalent chromium	18540-29-9	<0.0020	0.0397	mg/L	99.2	85 - 115				04/01/10

Date: 3 May 2010
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K RA
Subject: Radiochemical - Sample Data Groups (SDGs) H4194, H4202, WSCF20100515 and WSCF100646

INTRODUCTION

This memorandum presents the results of data validation for SDGs H4194 and H4202 prepared by Eberline Services, and SDGs WSCF20100515 and WSCF100646 prepared by WSCF. 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
B23K53	4/01/2010	Soil	C	See note 1
B23K54	4/01/2010	Soil	C	See note 1
B23K55	4/01/2010	Soil	C	See note 1
B23K56	4/01/2010	Soil	C	See note 1
B23K57	4/01/2010	Soil	C	See note 1
B23K58	4/01/2010	Soil	C	See note 1
B23K59	4/01/2010	Soil	C	See note 1
B23K60	4/01/2010	Soil	C	See note 1
B23K61	4/01/2010	Soil	C	See note 1
B250H2	4/01/2010	Water	C	See note 1

1 – Gamma Spectrometry, Isotopic-Pu, Isotopic-U & Sr-89/90

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, or five half-lives, whichever is shorter. Sample preservation for water samples requires acid preservation with nitric acid to pH <2. There are no specific preservation requirements for radiochemical soil/solid analysis.

The samples were analyzed within the prescribed holding time 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 analysis.

Field Blanks

No field blanks were submitted for analysis.

Equipment Blanks

No equipment blanks were submitted for analysis.

- **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. According to the SAP, 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.

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

All carrier/tracer recovery factors were acceptable.

- **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. According to the SAP, the relative percent difference (RPD) limits are ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs for soils exceed the limits and have associated results <5X the SAP required detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <2X the required detection limits no precision infraction occurred. When duplicate RPDs for waters exceed the limits and have associated results <5X the SAP required detection limits (or <5X the laboratory required detection limits for analytes not listed in the SAP) with differences <1X the required detection limits no precision infraction occurred. When no required detection limits are provided and the sample and duplicate results are statistically equal (Duplicate Error Ratio <3) no precision infraction occurred.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Field Split Samples

No field splits were submitted for analysis.

- **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 with the following exceptions. Samples B23K56 and B23K61 had Eu-155 MDCs slightly > the CRDL. It should be noted that water sample CRDLs were not provided in the SAP.

- **Completeness**

SDGs H4194, H4202, WSCF20100515 and WSCF100646 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

HNF-20434, Rev. 0, *Data Validation Procedure for Radiochemical Analyses*, June 2004.

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.

- **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: H4194, H4202, WSCF20100515 & WSCF100646	Reviewer: AQA	Project: 100-K RA	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Radiochemical	None	N/A	N/A

Appendix 3

Annotated Laboratory Reports

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

7811-001 B250H2

DATA SHEET

SDG	7811	Client/Case no	CHPRC	SDG H4194	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S004003-01	Client sample id	B250H2		
Dept sample id	7811-001	Location/Matrix	100-K-4 Fish Pond; EB	WATER	
Received	04/02/10	Collected/Volume	04/01/10 09:00	5 L	
		Custody/SAF No	F10-172-002	F10-172	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.116	0.32	0.622	2.00	U	SR
Uranium 233/234	U-233/234	0.149	0.10	0.159	1.00	U	U
Uranium 235	15117-96-1	0.040	0.040	0.154	1.00	U	U
Uranium 238	U-238	0.083	0.067	0.127	1.00	U	U
Plutonium 238	13981-16-3	0.021	0.12	0.256	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.021	0.042	0.159	1.00	U	PU

100-K-4 Waste Site Verification Sampling - QC Sampling

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-001 B23K53

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-01	Client sample id	B23K53	
Dept sample id	7818-001	Location/Matrix	100-K-4 Fish Pond;S1	SOLID
Received	04/08/10	Collected/Weight	04/01/10 13:40	153 g
% solids	95.8	Custody/SAF No	F10-082-018	F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.048	0.22	0.435	1.00	U	SR
Uranium 233/234	U-233/234	0.422	0.19	0.147	1.00		U
Uranium 235	15117-96-1	0.023	0.047	0.178	1.00	U	U
Uranium 238	U-238	0.269	0.15	0.147	1.00		U
Plutonium 238	13981-16-3	0	0.062	0.236	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.062	0.236	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-002 B23K54

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-02	Client sample id	B23K54	
Dept sample id	7818-002	Location/Matrix	100-K-4 Fish Pond;S2	SOLID
Received	04/08/10	Collected/Weight	04/01/10 13:50	142 g
% solids	94.3	Custody/SAF No	F10-082-019	F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.045	0.14	0.304	1.00	U	SR
Uranium 233/234	U-233/234	0.556	0.23	0.213	1.00		U
Uranium 235	15117-96-1	0.135	0.11	0.206	1.00	U	U
Uranium 238	U-238	0.378	0.18	0.170	1.00		U
Plutonium 238	13981-16-3	0	0.064	0.246	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.064	0.246	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-003 B23K55

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-03	Client sample id	B23K55	
Dept sample id	7818-003	Location/Matrix	100-K-4 Fish Pond;S3	SOLID
Received	04/08/10	Collected/Weight	04/01/10 14:00	112 g
% solids	94.4	Custody/SAF No	F10-082-020	F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.034	0.28	0.586	1.00	U	SR
Uranium 233/234	U-233/234	0.757	0.32	0.200	1.00		U
Uranium 235	15117-96-1	0.032	0.063	0.242	1.00	U	U
Uranium 238	U-238	0.704	0.27	0.200	1.00		U
Plutonium 238	13981-16-3	0.067	0.13	0.320	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.033	0.067	0.256	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-004 B23K56

DATA SHEET

SDG	7818	Client/Case no	CHPRC SDG_H4202
Contact	N. Joseph Verville	Contract	No. 33677
Lab sample id	S004033-04	Client sample id	B23K56
Dept sample id	7818-004	Location/Matrix	100-K-4 Fish Pond;S3 DUP SOLID
Received	04/08/10	Collected/Weight	04/01/10 14:00 122 g
% solids	94.5	Custody/SAF No	F10-082-021 F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.049	0.17	0.367	1.00	U	SR
Uranium 233/234	U-233/234	0.525	0.24	0.223	1.00		U
Uranium 235	15117-96-1	0.035	0.071	0.270	1.00	U	U
Uranium 238	U-238	0.583	0.30	0.223	1.00		U
Plutonium 238	13981-16-3	0.032	0.13	0.303	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.063	0.242	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-005 B23K57

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S004033-05	Client sample id	B23K57		
Dept sample id	7818-005	Location/Matrix	100-K-4 Fish Pond;S4	SOLID	
Received	04/08/10	Collected/Weight	04/01/10 14:15	133 g	
% solids	94.0	Custody/SAF No	F10-082-022	F10-082	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.068	0.17	0.331	1.00	U	SR
Uranium 233/234	U-233/234	0.391	0.24	0.230	1.00		U
Uranium 235	15117-96-1	0	0.073	0.279	1.00	U	U
Uranium 238	U-238	0.602	0.25	0.230	1.00		U
Plutonium 238	13981-16-3	0.032	0.13	0.310	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.032	0.065	0.247	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-006 B23K58

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG_H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-06	Client sample id	B23K58	
Dept sample id	7818-006	Location/Matrix	100-K-4 Fish Pond;D1	SOLID
Received	04/08/10	Collected/Weight	04/01/10 13:05	148 g
% solids	94.1	Custody/SAF No	F10-082-023	F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.119	0.13	0.295	1.00	U	SR
Uranium 233/234	U-233/234	0.325	0.19	0.177	1.00		U
Uranium 235	15117-96-1	0	0.056	0.215	1.00	U	U
Uranium 238	U-238	0.742	0.28	0.177	1.00		U
Plutonium 238	13981-16-3	0.038	0.15	0.290	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.076	0.290	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-007 B23K59

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S004033-07	Client sample id	B23K59		
Dept sample id	7818-007	Location/Matrix	100-K-4 Fish Pond;D2	SOLID	
Received	04/08/10	Collected/Weight	04/01/10 13:15	161 g	
% solids	95.1	Custody/SAF No	F10-082-024	F10-082	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.238	0.30	0.549	1.00	U	SR
Uranium 233/234	U-233/234	0.416	0.083	0.055	1.00		U
Uranium 235	15117-96-1	0.010	0.020	0.047	1.00	U	U
Uranium 238	U-238	0.424	0.083	0.031	1.00		U
Plutonium 238	13981-16-3	0.053	0.11	0.254	1.00	U	PU
Plutonium 239/240	PU-239/240	0.027	0.053	0.203	1.00	U	PU

100 K 4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-008 B23K60

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-08	Client sample id	B23K60	
Dept sample id	7818-008	Location/Matrix	100-K-4 Fish Pond;D3	SOLID
Received	04/08/10	Collected/Weight	04/01/10 13:35	160 g
% solids	94.8	Custody/SAF No	F10-082-025	F10-082

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.209	0.21	0.504	1.00	U	SR
Uranium 233/234	U-233/234	0.392	0.17	0.158	1.00		U
Uranium 235	15117-96-1	0.050	0.050	0.191	1.00	U	U
Uranium 238	U-238	0.412	0.17	0.158	1.00		U
Plutonium 238	13981-16-3	0	0.064	0.246	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.064	0.246	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-009 B23K61

DATA SHEET

SDG	7818	Client/Case no	CHPRC	SDG H4202
Contact	N. Joseph Verville	Contract	No. 33677	
Lab sample id	S004033-09	Client sample id	B23K61	
Dept sample id	7818-009	Location/Matrix	100-K-4 Fish Pond;D4	SOLID
Received	04/08/10	Collected/Weight	04/01/10 13:25 140 g	
% solids	94.8	Custody/SAF No	F10-082-026 F10-082	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.003	0.18	0.355	1.00	U	SR
Uranium 233/234	U-233/234	0.272	0.20	0.189	1.00		U
Uranium 235	15117-96-1	0.090	0.12	0.229	1.00	U	U
Uranium 238	U-238	0.470	0.20	0.189	1.00		U
Plutonium 238	13981-16-3	-0.031	0.13	0.300	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.063	0.239	1.00	U	PU

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00924
Client ID: B23K53 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	5.48e-03	pCi/g	+-0.0109	pCi/g	1.00	0.020		04/05/10
Cesium-137	10045-97-3	LA-508-481	U	0.0145	pCi/g	+-0.0126	pCi/g	1.00	0.023		04/05/10
Europium-152	14683-23-9	LA-508-481	U	0.0194	pCi/g	+-0.0475	pCi/g	1.00	0.062		04/05/10
Europium-154	15585-10-1	LA-508-481	U	7.73e-03	pCi/g	+-0.0374	pCi/g	1.00	0.058		04/05/10
Europium-155	14391-16-3	LA-508-481	U	0.0278	pCi/g	+-0.0534	pCi/g	1.00	0.090		04/05/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00925
Client ID: B23K54 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	-1.38e-03	pCi/g	+-9.62e-03	pCi/g	1.00	0.017		04/05/10
Cesium-137	10045-97-3	LA-508-481	U	1.25e-04	pCi/g	+-1.25e-03	pCi/g	1.00	0.016		04/05/10
Europium-152	14683-23-9	LA-508-481	U	-0.0308	pCi/g	+-0.0352	pCi/g	1.00	0.049		04/05/10
Europium-154	15585-10-1	LA-508-481	U	-0.0257	pCi/g	+-0.0307	pCi/g	1.00	0.050		04/05/10
Europium-155	14391-16-3	LA-508-481	U	7.12e-03	pCi/g	+-0.0434	pCi/g	1.00	0.073		04/05/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00926
Client ID: B23K55 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	1.32e-03	pCi/g	+-0.0105	pCi/g	1.00	0.019		04/06/10
Cesium-137	10045-97-3	LA-508-481		0.0371	pCi/g	+-0.0224	pCi/g	1.00	0.019		04/06/10
Europium-152	14683-23-9	LA-508-481	U	-0.0318	pCi/g	+-0.0415	pCi/g	1.00	0.054		04/06/10
Europium-154	15585-10-1	LA-508-481	U	3.49e-03	pCi/g	+-0.0317	pCi/g	1.00	0.056		04/06/10
Europium-155	14391-16-3	LA-508-481	U	0.0170	pCi/g	+-0.0498	pCi/g	1.00	0.084		04/06/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

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N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00927
Client ID: B23K56 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	-4.39e-03	pCi/g	+-0.0186	pCi/g	1.00	0.032		04/05/10
Cesium-137	10045-97-3	LA-508-481	U	0.0361	pCi/g	+-0.0263	pCi/g	1.00	0.041		04/05/10
Europium-152	14683-23-9	LA-508-481	U	0.0711	pCi/g	+-0.0961	pCi/g	1.00	0.10		04/05/10
Europium-154	15585-10-1	LA-508-481	U	-0.0688	pCi/g	+-0.0647	pCi/g	1.00	0.10		04/05/10
Europium-155	14391-16-3	LA-508-481	U	0.0168	pCi/g	+-0.0690	pCi/g	1.00	0.11		04/05/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00928
Client ID: B23K57 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	-3.20e-03	pCi/g	+-8.66e-03	pCi/g	1.00	0.015		04/06/10
Cesium-137	10045-97-3	LA-508-481		0.117	pCi/g	+-0.0272	pCi/g	1.00	0.015		04/06/10
Europium-152	14683-23-9	LA-508-481	U	0.0447	pCi/g	+-0.0235	pCi/g	1.00	0.048		04/06/10
Europium-154	15585-10-1	LA-508-481	U	-3.46e-03	pCi/g	+-0.0292	pCi/g	1.00	0.051		04/06/10
Europium-155	14391-16-3	LA-508-481	U	0.0410	pCi/g	+-0.0445	pCi/g	1.00	0.070		04/06/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00929
Client ID: B23K58 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	-6.71e-03	pCi/g	+-9.15e-03	pCi/g	1.00	0.015		04/06/10
Cesium-137	10045-97-3	LA-508-481		0.0210	pCi/g	+-0.0125	pCi/g	1.00	0.019		04/06/10
Europium-152	14683-23-9	LA-508-481	U	-3.82e-03	pCi/g	+-0.0303	pCi/g	1.00	0.050		04/06/10
Europium-154	15585-10-1	LA-508-481	U	-0.0186	pCi/g	+-0.0334	pCi/g	1.00	0.047		04/06/10
Europium-155	14391-16-3	LA-508-481	U	6.44e-03	pCi/g	+-0.0434	pCi/g	1.00	0.073		04/06/10

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00930
Client ID: B23K59 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	1.10e-03	pCi/g	+-9.53e-03	pCi/g	1.00	0.017		04/06/10
Cesium-137	10045-97-3	LA-508-481		0.0212	pCi/g	+-0.0154	pCi/g	1.00	0.015		04/06/10
Europium-152	14683-23-9	LA-508-481	U	4.03e-03	pCi/g	+-0.0335	pCi/g	1.00	0.050		04/06/10
Europium-154	15585-10-1	LA-508-481	U	-0.0170	pCi/g	+-0.0299	pCi/g	1.00	0.050		04/06/10
Europium-155	14391-16-3	LA-508-481	U	5.07e-03	pCi/g	+-0.0422	pCi/g	1.00	0.071		04/06/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00931
Client ID: B23K60 GPP TRENT WSCF

Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	6.22e-03	pCi/g	+-7.94e-03	pCi/g	1.00	0.015		04/06/10
Cesium-137	10045-97-3	LA-508-481	U	-7.91e-03	pCi/g	+-8.41e-03	pCi/g	1.00	0.014		04/06/10
Europium-152	14683-23-9	LA-508-481	U	-0.0268	pCi/g	+-0.0268	pCi/g	1.00	0.040		04/06/10
Europium-154	15585-10-1	LA-508-481	U	-7.83e-03	pCi/g	+-0.0267	pCi/g	1.00	0.039		04/06/10
Europium-155	14391-16-3	LA-508-481	U	0.0377	pCi/g	+-0.0359	pCi/g	1.00	0.062		04/06/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-082
Sample # W10GR00932
Client ID: B23K61 GPP TRENT WSCF
Matrix: SOIL

Group #: WSCF20100515
Department: Radiochemistry
Sampled: 04/01/10
Received: 04/02/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Gamma Energy Analysis-grd H2O											
Cobalt-60	10198-40-0	LA-508-481	U	-1.22e-03	pCi/g	+-0.0122	pCi/g	1.00	0.030		04/06/10
Cesium-137	10045-97-3	LA-508-481	U	-2.87e-03	pCi/g	+-0.0180	pCi/g	1.00	0.031		04/06/10
Europium-152	14683-23-9	LA-508-481	U	-0.0358	pCi/g	+-0.0923	pCi/g	1.00	0.083		04/06/10
Europium-154	15585-10-1	LA-508-481	U	-2.43e-03	pCi/g	+-0.0243	pCi/g	1.00	0.098		04/06/10
Europium-155	14391-16-3	LA-508-481	U	8.44e-03	pCi/g	+-0.0750	pCi/g	1.00	0.13		04/06/10

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF Analytical Results Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100646

Sample # 100646001
SAF# F10-172
Sample ID B250H2

Matrix WATER
Sampled 04/01/10
Received 04/01/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**04/01/10**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	0.98	5.7	pCi/L	1	9.9		04/05/10
Cobalt-60	10198-40-0	LA-508-481	U	2.9	5.5	pCi/L	1	10		04/05/10
Europium-152	14683-23-9	LA-508-481	U	2.0	14	pCi/L	1	24		04/05/10
Europium-154	15585-10-1	LA-508-481	U	6.4	15	pCi/L	1	28		04/05/10
Europium-155	14391-16-3	LA-508-481	U	-18	19	pCi/L	1	25		04/05/10

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 H4194 was composed of one water sample designated under SAF No. F10-172 with a Project Designation of: 100-K-4 Waste Site Verification Sampling – QC Sampling.

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 Total Strontium Analysis

The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. No problems were encountered during the course of the analyses.

2.1 Isotopic Uranium Analysis

The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. No problems were encountered during the course of the analyses.

2.1 Isotopic Plutonium Analysis

The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. No 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."

for M W Thom

N. Joseph Verville
Client Services Manager

4-9-10

Date

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-172-002	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 7B	DATA TURNAROUND
JS Scales CHPRC	WIDRIG, DL H4194	376-2858 (7811)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
100-K-4 Fish Pond; EB	100-K-4 Waste Site Verification Sampling - QC Sampling		F10-172		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
6WS-090	HNF - N - 507	0 - 2"	302451ES10	FEDERAL EXPRESS	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Eberline Services	SEE PTR		~~SEE PTR~~ LW. 4/1/10 7934 0994 6869		

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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION			HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2
HOLDING TIME			6 Months	6 Months	6 Months
TYPE OF CONTAINER			G/P	G/P	G/P
NO. OF CONTAINER(S)			1	2	2
VOLUME			1000mL	1000mL	1000mL
SAMPLE ANALYSIS			SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Strontium-89,90 -- Total Sr;
SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**		
B250H2	WATER	4/1/10	0900	✓	✓	✓

30

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Scales CHPRC	APR 01 2010 / 1430	Fed Ex LW. 4/1/10	~~APR 01 2010~~ / 1430
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Fed Ex	04/02/10 10:00	Santini	04/02/10 10:00
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
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

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐**
The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Isotopic Plutonium {Plutonium-238, Plutonium-239/240};
(2) Isotopic Uranium {Uranium-233/234, Uranium-235};

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

1.0 GENERAL

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4202 was composed of nine solid (soil) samples designated under SAF No. F10-102 with a Project Designation of: 100-K-4 Waste Site Verification Sampling - Soil.

The samples were received as stated on the chain-of-custody documents. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analysis

The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analysis

The relative percent difference (RPD) in the original and duplicate results for U-233/234 (28%) and U-238 (62%), were both greater than the control limit of 25%, however per DOE QSAS, Rev. 2.5, "When either the DER or the RPD pass, then the duplicate is acceptable." In this case, the DER was for U-233/234 was 1.8, and for U-238 was 2.0, both less than the control limit of 3.0. No other problems were encountered during the course of the analyses.

2.3 Isotopic Plutonium Analysis

The results for both the original and duplicate analyses were less than their respective MDA's, therefore no RPD is calculated, and there is no associated control limit. No 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."

N. Verville

N. Joseph Verville
Client Services Manager

4/15/10

Date

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-018	PAGE 1 OF 1

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL H4202	**TELEPHONE NO.** 376-2858 (7818)	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days	**AIR QUALITY** ☐	
SAMPLING LOCATION 100-K-4 Fish Pond; S1	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	
ICE CHEST NO. GWS - 2010	**FIELD LOGBOOK NO.** ~~HNF-N-507-12~~	**ACTUAL SAMPLE DEPTH** 0 - 1"	**COA** 302451ES10
METHOD OF SHIPMENT FEDERAL EXPRESS			
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SEE PTR	**BILL OF LADING/AIR BILL NO.** ~~SEE PTR~~ LW. 4/7/10 798541760 3370	

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)

SPECIAL HANDLING AND/OR STORAGE
Pad file TO: B23K62

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K53	SOIL	APR 0 1 2010	1340	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 0 1 2010 / 1500	S.S.U MO-1109	APR 0 1 2010 / 1500
S.S.U MO-1109	APR 0 7 2010 / 1030	FM Hall CHPRC	APR 0 7 2010 / 1030
FM Hall CHPRC	APR 0 7 2010 / 1500	FED EX	APR 0 7 2010 / 1500
FEDEX		Alex Kelly KELENSON	4/8/10 1030

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-019	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8B	DATA TURNAROUND
FM Hall CHPRC	WIDRIG, DL H4202	376-2858 (7818)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
100-K-4 Fish Pond; S2	100-K-4 Waste Site Verification Sampling - Soil		F10-082		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
GWS-2010	HNF -~~N-507~~-12 -	0 - 1"	302451ES10	FEDERAL EXPRESS	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Eberline Services	SEE PTR		~~SEE PTR~~ 7985476033 70		

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)

SPECIAL HANDLING AND/OR STORAGE
Radtie to: B23K63

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K54	SOIL	APR 01 2010	1350	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U # MO-1109	APR 01 2010 / 1500
S.S.U # MO-1109	APR 07 2010 / 1030	FM Hall CHPRC	APR 07 2010 / 1030
FM Hall CHPRC	APR 07 2010 / 1500	FED EX	APR 07 2010 / 1500
FEDEX		Alex Kelleney KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-020	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8B	DATA TURNAROUND
FM Hall CHPRC	WIDRIG, DL H4202	376-2858 (7818)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.
100-K-4 Fish Pond; S3	100-K-4 Waste Site Verification Sampling - Soil	F10-082

ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
GWS-2010	HNF-N-507-12	0-1"	302451ES10	FEDERAL EXPRESS

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Eberline Services	SEE PTR	~~SEE PTR~~ 785476033370

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)

SPECIAL HANDLING AND/OR STORAGE
Rad tie to: B23K64

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K55	SOIL	APR 01 2010	1400	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 /1500	MO-1109 S.S.U	APR 01 2010 /1500
MO-1109 S.S.U.	APR 07 2010 /1030	FM Hall CHPRC	APR 07 2010 /1030
FM Hall CHPRC	APR 07 2010 /1500	FED EX	APR 07 2010 /1500
FED EX		Alex Kelenson KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-082-021	PAGE 1 OF 1
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL H4202	TELEPHONE NO.: 376-2858 (7818)	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days
SAMPLING LOCATION: 100-K-4 Fish Pond; S3 DUP	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil		SAF NO.: F10-082	AIR QUALITY ☐	
ICE CHEST NO.: GWS - 2010	FIELD LOGBOOK NO.: HNF -N-507- 12.	ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: ~~SEE PTR~~ LW. 4/7/10 798547603370		

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)

SPECIAL HANDLING AND/OR STORAGE
Radtie TO: ~~B23K63~~ B23K64 TMT 3-3-1-10

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K56	SOIL	APR 0 1 2010	1400	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC [signature]	APR 0 1 2010 /1500	S.S.U MO - 1109	APR 0 1 2010 /1500
S.S.U MO - 1109	APR 0 7 2010 /1030	FM Hall CHPRC [signature]	APR 0 7 2010 /1030
FM Hall CHPRC [signature]	APR 0 7 2010 /1500	FED Ex	APR 0 7 2010 /1500
FED EX		[signature] KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-022	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8B	DATA TURNAROUND
FM Hall CHPRC	WIDRIG, DL H4202	376-2858 (7818)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.
100-K-4 Fish Pond; S4	100-K-4 Waste Site Verification Sampling - Soil	F10-082

ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
GWS-2010	HNF-N-507-12	0-1"	302451ES10	FEDERAL EXPRESS

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Eberline Services	SEE PTR	~~SEE PTR~~ 7985476033 70

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)

SPECIAL HANDLING AND/OR STORAGE
Radioactive tie to: B23K65

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B23K57	SOIL	APR 01 2010	1415

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U. MO-1109	APR 01 2010 1500
S.S.U. MO-1109	APR 07 2010 1030	FM Hall CHPRC	APR 07 2010 1030
FM Hall CHPRC	APR 07 2010 1500	FED EX	APR 07 2010 1500
Alex Kelen FED EX		Alex Kelensky KELENSON	4/8/10 10:00
4/8/10 AK			

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-023	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8B	DATA TURNAROUND
FM Hall CHPRC	WIDRIG, DL H4202	375-2858 (7818)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
100-K-4 Fish Pond; D1	100-K-4 Waste Site Verification Sampling - Soil		F10-082		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
GWS-2010	HNF-N-507-12	0-1"	302451ES10	FEDERAL EXPRESS	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Eberline Services	SEE PTR		~~SEE PTR~~ 798547603370 KW 4/7/10		

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)

SPECIAL HANDLING AND/OR STORAGE
Bad tie to: B23K66

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K58	SOIL	APR 01 2010	1305	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 07 2010 / 1030	FM Hall CHPRC	APR 07 2010 / 1030
FM Hall CHPRC	APR 07 2010 / 1500	FED EX	APR 07 2010 / 1500
FED EX		Alex Kilentup KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-024	PAGE 1 OF 1

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL H4202	**TELEPHONE NO.** 376-2858 (7818)	**PROJECT COORDINATOR** WIDRIG, DL	**PRICE CODE** 8B / **DATA TURNAROUND**
SAMPLING LOCATION 100-K-4 Fish Pond; D2	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil		**SAF NO.** F10-082	**AIR QUALITY** ☐ / 7 Days / 15 Days
ICE CHEST NO. GWS - 2010	**FIELD LOGBOOK NO.** HNF-N-507-12	**ACTUAL SAMPLE DEPTH** 0 - 1"	**COA** 302451ES10	**METHOD OF SHIPMENT** FEDERAL EXPRESS
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SEE PTR		**BILL OF LADING/AIR BILL NO.** ~~SEE PTR~~ 798547603370 AW 4/7/10	

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)

SPECIAL HANDLING AND/OR STORAGE
Road tie to: B23K07

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K59	SOIL	4/1/10	1315	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 07 2010 / 1030	FM Hall CHPRC	APR 07 2010 / 1030
FM Hall CHPRC	APR 07 2010 / 1500	FED EX	APR 07 2010 / 1500
FED EX		Alex Kelenson KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-082-025	PAGE 1 OF 1
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL H4202	TELEPHONE NO.: 376-2858 (7818)	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 8B	DATA TURNAROUND
SAMPLING LOCATION: 100-K-4 Fish Pond; D3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil		SAF NO.: F10-082	AIR QUALITY ☐	7 Days / 15 Days
ICE CHEST NO.: GWS-2010	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: ~~SEE PTR~~ 798547603370 LW 4/7/10		

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)

SPECIAL HANDLING AND/OR STORAGE
Bad tie to: B23K08

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B23K60	SOIL	APR 01 2010	1335

17

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U. MO-1109	APR 01 2010 1500
S.S.U MO-1109	~~APR 02 2010~~ APR 07 2010 1030	FM Hall CHPRC	~~APR 02 2010~~ APR 07 2010 1030
FM Hall CHPRC	~~APR 02 2010~~ APR 07 2010 1500	Fed Ex	~~APR 02 2010~~ APR 07 2010 1500
FEDEX		Alex Kelenson KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F10-082-026	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8B	DATA TURNAROUND
FM Hall CHPRC	WIDRIG, DL H4202	376-2858 (7818)	WIDRIG, DL	AIR QUALITY ☐	7 Days / 15 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.
100-K-4 Fish Pond; D4	100-K-4 Waste Site Verification Sampling - Soil	F10-082

ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
GWS-2010	HNF-N-507-12		302451ES10	FEDERAL EXPRESS

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Eberline Services	SEE PTR	~~SEE PTR~~ AW, 4/7/10 798547603370

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)

SPECIAL HANDLING AND/OR STORAGE
had file to: B23K69

PRESERVATION	None
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B23K61	SOIL	4/1/10	1325	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.UMO-1109	APR 01 2010 / 1500
S.S.UMO1109	APR 07 2010 / 1030	FM Hall CHPRC	APR 07 2010 / 1030
FM Hall CHPRC	APR 07 2010 / 1500	FED EX	APR 07 2010 / 1500
FEDEX		KELENSON	4/8/10 10:00

SPECIAL INSTRUCTIONS
** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1)Isotopic Plutonium {Plutonium-239/240, Plutonium-238} Isotopic Uranium {Uranium-233/234, Uranium-235} Strontium-89,90 -- Total Sr;

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

Attachment 2
Narrative
WSCF20100515

Introduction

Nine (9) S&GRP samples were received at the WSCF Laboratory on April 2, 2010. The samples were 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, 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,* pages 11 through 12, 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, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 31 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All QC controls are within the established limits.

Attachment 2
Narrative
WSCF20100515

ICP-AES 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. See page 32 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)
    - Estimated Boron result due to Iron interference. Sample results are "E" flagged.

All other QC controls are within the established limits.

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. See page 33 through 36 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00943 (B243T7 in work order 20100518)
    - Manganese – Matrix Spike recovery and RPD laboratory limits were exceeded. Affected sample results in this batch were "N" flagged.
- Batch QC analyzed on sample# W10GR00907 no not apply to this Sample Data Group. Due to software constraints this data cannot be removed. Please ignore.

All other 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. See page 47 for QC details. Analytical Note(s):

- Rad Chem requested to be performed included: Gamma Energy Analysis.
- Gamma Energy Analysis: Batch QC analyzed on sample# W10GR00924 (B23K53 in work order 20100515)

All 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 the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Richard Barker 4-21-10
Richard Barker
WSCF Client Services

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-001 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days
SAMPLING LOCATION: 100-K-4 Fish Pond; S1	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil		SAF NO.: F10-082	AIR QUALITY: ☐	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12-	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
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)

SPECIAL HANDLING AND/OR STORAGE: 20100515

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K53 W10GR20924	SOIL	APR 01 2010	1340	✓	✓	✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall CHPRC	APR 02 2010 / 1300
FM Hall CHPRC	APR 02 2010 / 1345	Victor Diaz	APR 02 2010 / 1345

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-002

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days		
SAMPLING LOCATION 100-K-4 Fish Pond; 52	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil		**SAF NO.** F10-082
AIR QUALITY ☐			
ICE CHEST NO. SAXL-107	**FIELD LOGBOOK NO.** HNF-~~N-507~~-12-	**ACTUAL SAMPLE DEPTH** 0-1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K54 925	SOIL	APR 01 2010	1350	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Rim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-003

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K55 926	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
FM Hall CHPRC	S.S.U MO-1109 APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345		APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-004 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	SAMPLING LOCATION: 100-K-4 Fish Pond; S3 DUP
PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12
ACTUAL SAMPLE DEPTH: 0-1''	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K56 927	SOIL	APR 01 2010	1400	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	SSU MO-1109	APR 01 2010 1500
S.S.U. MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Silva	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-005

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; S4	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SAIL - 107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0 - 1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K57 928	SOIL	APR 01 2010	1415	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 /1500	S.S.U MO - 1109	APR 01 2010 /1500
S.S.U MO - 1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sly	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | **F10-082-006** | **PAGE 1 OF 1**

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days	**AIR QUALITY** ☐	
SAMPLING LOCATION 100-K-4 Fish Pond; D1	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	
ICE CHEST NO. SML - 107	**FIELD LOGBOOK NO.** HNF-~~N-507~~-12-	**ACTUAL SAMPLE DEPTH** 0 - 1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE			
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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K58 929	SOIL	APR 0 1 2010	1303	✓	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 0 1 2010 /1500	S.S.U MO - 1109	APR 0 1 2010 /1500
S.S.U MO - 1109	APR 0 2 2010 1300	FM Hall CHPRC	APR 0 2 2010 /1300
FM Hall CHPRC	APR 0 2 2010 1345		APR 0 2 2010 /1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-007 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC

SAMPLING LOCATION: 100-K-4 Fish Pond; D2

ICE CHEST NO.: SML - 107

SHIPPED TO: Waste Sampling & Characterization

COMPANY CONTACT: WIDRIG, DL

TELEPHONE NO.: 376-2858

PROJECT COORDINATOR: WIDRIG, DL

PRICE CODE: 8B

DATA TURNAROUND: 7 Days / 15 Days

AIR QUALITY: ☐

PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil

SAF NO.: F10-082

FIELD LOGBOOK NO.: HNF-N-507-12-

ACTUAL SAMPLE DEPTH: 0-1"

COA: 302451ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K59	930 SOIL	APR 01 2010	1315	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	V. Ray	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD | DISPOSED BY | DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-008 PAGE 1 OF 1

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8B	DATA TURNAROUND: 7 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: 100-K-4 Fish Pond; D3	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - Soil	SAF NO.: F10-082	
ICE CHEST NO.: SML-107	FIELD LOGBOOK NO.: HNF-N-507-12	ACTUAL SAMPLE DEPTH: 0-1"	COA: 302451ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K60 931	SOIL	APR 01 2010	1335	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	APR 01 2010 1500	S.S.U MO-1109	APR 01 2010 1500
S.S.U MO-1109	APR 02 2010 1300	FM Hall CHPRC	APR 02 2010 1300
FM Hall CHPRC	APR 02 2010 1345	Victor Sim	APR 02 2010 1345

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(01/06)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-082-009

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** WIDRIG, DL	**TELEPHONE NO.** 376-2858	**PROJECT COORDINATOR** WIDRIG, DL
PRICE CODE 8B	**DATA TURNAROUND** 7 Days / 15 Days	**AIR QUALITY** ☐	
SAMPLING LOCATION 100-K-4 Fish Pond; D4	**PROJECT DESIGNATION** 100-K-4 Waste Site Verification Sampling - Soil	**SAF NO.** F10-082	
ICE CHEST NO. SAAL-107	**FIELD LOGBOOK NO.** HNF ~~N-607~~-12	**ACTUAL SAMPLE DEPTH** 0-1"	**COA** 302451ES10
METHOD OF SHIPMENT GOVERNMENT VEHICLE	**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)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C	None
TYPE OF CONTAINER	G/P	G/P	Square Bottle - Poly
NO. OF CONTAINER(S)	1	1	1
VOLUME	120mL	60mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B23K61 932	SOIL	4/1/10	1325	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	APR 01 2010 / 1500	S.S.U MO-1109	APR 01 2010 / 1500
S.S.U MO-1109	APR 02 2010 / 1300	FM Hall	APR 02 2010 / 1300
FM Hall	APR 02 2010 / 1345	CHPRC	APR 02 2010 / 1345
CHPRC			

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Tin, Molybdenum, Strontium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} ICP Metals - 6010 (Add-On) {Boron, Lithium}
(2)Gamma Spectroscopy {Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60}

ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)

Attachment 2
Narrative
WSCF100646

Introduction

One (1) (specify either groundwater or S&GRP) sample was received at the WSCF Laboratory on April 1st, 2010. 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

ICP-AES 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):

- Batch QC 108091 analyzed on sample# B23W01 (100667003)

- Boron was detected in the Blank at a concentration less than the PQL, but equal to the MDL. Boron was not detected in the sample. No flag issued.

All other QC controls are within the established limits.

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):

- Batch QC 108179 analyzed on sample# B24F43 (100609002)
  - Vanadium was detected in the Blank at a concentration less than the PQL, but greater than the MDL. Vanadium sample result not affected. No flag issued.

All other 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):

- Rad Chem requested to be performed included: Gamma Energy Analysis.
- Gamma Energy Analysis:
  - Batch QC 107682 analyzed on sample# B24TF3 (100632001)
  - Cesium-137, Cobalt-60, Europium-152, and Europium-154 – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results below 5X the minimum detectable activity. No flags issued.
  - All other 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.

Sample Receipt

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-172-001	PAGE 1 OF 1
COLLECTOR: JS Scales CHPRC	COMPANY CONTACT: WIDRIG, DL	TELEPHONE NO.: 376-2858	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 7B	DATA TURNAROUND: 7 Days / 15 Days
SAMPLING LOCATION: 100-K-4 Fish Pond; EB	PROJECT DESIGNATION: 100-K-4 Waste Site Verification Sampling - QC Sampling		SAF NO.: F10-172	AIR QUALITY: ☐	
ICE CHEST NO.: SML-210	FIELD LOGBOOK NO.: HNF-N-507	ACTUAL SAMPLE DEPTH: 0-2"	COA: 302451ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
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)

100646

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	HNO3 to pH <2/Cool=4C	HNO3 to pH <2
HOLDING TIME	6 Months	6 Months
TYPE OF CONTAINER	G/P	G/P
NO. OF CONTAINER(S)	1	1
VOLUME	500ml	500ml
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B250H2	WATER	4/1/10	0900	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: JS Scales CHPRC APR 01 2010	DATE/TIME: 0930	RECEIVED BY/STORED IN: L.D.WALL L.D.Wall APR 01 2010	DATE/TIME: 0930
RELINQUISHED BY/REMOVED FROM: L.D.WALL L.D.Wall 4/1/10	DATE/TIME: 1020	RECEIVED BY/STORED IN: [signature] 4/1/10	DATE/TIME: 1020
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

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐**
The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc}; ICP/MS - 200.8 (Add-on) {Arsenic, Beryllium, Lead, Molybdenum, Selenium, Strontium, Tin, Uranium}; 200.8_HG - ICPMS {Mercury}; ICP Metals - 6010 (Add-On) {Boron, Lithium};
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; [illegible]

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Thursday, April 01, 2010 7:21:15 PM
Page 2 of 2

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100-K RA			DATA PACKAGE: VSR10-015		
VALIDATOR: Carl Schloesslin		LAB: Eberline & WSCF		DATE: 5-03-2010	
			SDG: H4194, H4202, WSCF20100515 & WSCF100646		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90 X	Technetium-99	Alpha Spectroscopy X	Gamma Spectroscopy X	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX

SDG H4194: Water sample B250H2
SDG H4202: Soil samples B23K53, B23K54, B23K55, B23K56, B23K57, B23K58, B23K59, B23K60, B23K61
SDG WSCF20100515: Soil samples B23K53, B23K54, B23K55, B23K56, B23K57, B23K58, B23K59, B23K60, B23K61
SDG WSCF100646: Water sample B250H2

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

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:

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: None

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

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

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

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: None

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:

For samples B23K56 & B23K61, the Eu-155 MDCs (0.11 & 0.03 pCi/g) were slightly above the CRDL of 0.10 pCi/g.

Appendix 6

Additional Documentation Requested By Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

7811-003 Method Blank

METHOD BLANK

SDG	7811	Client/Case no	CHPRC	SDG_H4194	
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S004003-03	Client sample id	Method Blank		
Dept sample id	7811-003	Material/Matrix		WATER	
		SAF No	F10-172		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.013	0.29	0.600	2.00	U	SR
Uranium 233/234	U-233/234	0.022	0.089	0.171	1.00	U	U
Uranium 235	15117-96-1	0	0.054	0.207	1.00	U	U
Uranium 238	U-238	0.022	0.045	0.171	1.00	U	U
Plutonium 238	13981-16-3	-0.040	0.080	0.221	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.020	0.040	0.153	1.00	U	PU

QC-BLANK #72868

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

7811-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7811

Contact N. Joseph Verville

Client/Case no CHPRC SDG H4194

Contract No. 33677

Lab sample id S004003-02

Dept sample id 7811-002

Client sample id Lab Control Sample

Material/Matrix WATER

SAF No F10-172

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	18.4	1.2	0.575	2.00		SR	17.8	0.71	103	80-120	80-120
Uranium 233/234	9.45	1.0	0.531	1.00		U	9.28	0.37	102	79-121	80-120
Uranium 235	7.59	0.88	0.141	1.00		U	7.54	0.30	101	78-122	80-120
Uranium 238	10.1	1.0	0.499	1.00		U	10.1	0.40	100	80-120	80-120
Plutonium 238	10.5	1.3	0.234	1.00		PU	11.5	0.46	91	79-121	80-120
Plutonium 239/240	13.4	1.5	0.187	1.00		PU	13.2	0.53	102	78-122	80-120

QC-LCS #72867

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

7811-004 B250H2

DUPLICATE

SDG 7811
Contact N. Joseph Verville
Client/Case no CHPRC SDG H4194
Contract No. 33677

DUPLICATE
Lab sample id S004003-04
Dept sample id 7811-004

ORIGINAL
Lab sample id S004003-01
Dept sample id 7811-001
Received 04/02/10

Client sample id B250H2
Location/Matrix 100-K-4 Fish Pond; EB WATER
Collected/Volume 04/01/10 09:00 5 L
Custody/SAF No F10-172-002 F10-172

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	0.097	0.29	0.577	2.00	U	SR	0.116	0.32	0.622	U	-		0.1
Uranium 233/234	0.023	0.092	0.220	1.00	U	U	0.149	0.10	0.159	U	-		1.8
Uranium 235	0	0.056	0.213	1.00	U	U	0.040	0.040	0.154	U	-		1.2
Uranium 238	0	0.046	0.176	1.00	U	U	0.083	0.067	0.127	U	-		2.0
Plutonium 238	-0.072	0.096	0.264	1.00	U	PU	0.021	0.12	0.256	U	-		1.2
Plutonium 239/240	0	0.048	0.182	1.00	U	PU	-0.021	0.042	0.159	U	-		0.7

QC-DUP#1 72869

100-K-4 Waste Site Verification Sampling - QC Sampling

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

Test PU Matrix WATER
SDG 7811
Contact N. Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4194

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 7252-006								
S004003-01			7811-001	B250H2	U		U	
S004003-02			7811-002	Lab Control Sample	ok		ok	
S004003-03			7811-003	Method Blank	U		U	
S004003-04			7811-004	Duplicate (S004003-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.00		1.00	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-006			2σ prep error 8.0 %	Reference Lab Notebook No. 7251 pg.002												
S004003-01			B250H2	0.256	0.500			73		167			6	04/07/10	04/07	SS-033
S004003-02			Lab Control Sample	0.234	0.500			70		167				04/07/10	04/07	SS-034
S004003-03			Method Blank	0.221	0.500			66		168				04/07/10	04/07	SS-036
S004003-04			Duplicate (S004003-01)	0.264	0.500			58		168			6	04/07/10	04/07	SS-037
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-040	Environmental Water Dissolution, rev 2
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.244 ± 0.040
YIELD 67 ± 13

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

Test U Matrix WATER
SDG 7811
Contact N. Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4194

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7252-006											
S004003-01			7811-001	B250H2	U	U	U				
S004003-02			7811-002	Lab Control Sample	ok	ok	ok				
S004003-03			7811-003	Method Blank	U	U	U				
S004003-04			7811-004	Duplicate (S004003-01)	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/L)	1.00	1.00	1.00	100		4	
							Averages				

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-006			2σ prep error 8.0 %	Reference Lab Notebook No. 7251 pg.002												
S004003-01			B250H2	0.159	0.500			79		167			6	04/07/10	04/07	SS-028
S004003-02			Lab Control Sample	0.531	0.500			90		167				04/07/10	04/07	SS-029
S004003-03			Method Blank	0.207	0.500			77		167				04/07/10	04/07	SS-031
S004003-04			Duplicate (S004003-01)	0.220	0.500			71		167			6	04/07/10	04/07	SS-032
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	
	UISO_PLATE_AEA	
	SPP-062	Sample Aliquoting, rev 1
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.279	±	0.340
YIELD	79	±	16

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4194

Test SR Matrix WATER
SDG 7811
Contact N. Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN WATER

BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4194

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
Preparation batch 7252-006						
S004003-01			7811-001	B250H2	U	
S004003-02			7811-002	Lab Control Sample	ok	
S004003-03			7811-003	Method Blank	U	
S004003-04			7811-004	Duplicate (S004003-01)	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.00	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-006			2σ prep error 10.4 % Reference Lab Notebook No. 7251 pg.002													
S004003-01			B250H2	0.622	0.500			93		100			6	04/07/10	04/07	GRB-221
S004003-02			Lab Control Sample	0.575	0.500			95		100				04/07/10	04/07	GRB-222
S004003-03			Method Blank	0.600	0.500			93		100				04/07/10	04/07	GRB-223
S004003-04			Duplicate (S004003-01)	0.577	0.500			95		100			6	04/07/10	04/07	GRB-220
Nominal values and limits from method				2.00	0.500			40-110		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-062	Sample Aliquoting, rev 1
	CP-380	Strontium in Water Samples, rev 5

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.594 ± 0.044
YIELD 94 ± 2

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/09/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-011 Method Blank

METHOD BLANK

SDG	7818	Client/Case no	CHPRC	SDG	H4202
Contact	N. Joseph Verville	Contract	No. 33677		
Lab sample id	S004033-11	Client sample id	Method Blank		
Dept sample id	7818-011	Material/Matrix		SOLID	
		SAF No	F10-082		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.065	0.28	0.578	1.00	U	SR
Uranium 233/234	U-233/234	0	0.048	0.183	1.00	U	U
Uranium 235	15117-96-1	0	0.058	0.221	1.00	U	U
Uranium 238	U-238	0	0.048	0.183	1.00	U	U
Plutonium 238	13981-16-3	0	0.067	0.256	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.067	0.256	1.00	U	PU

QC-BLANK #72925

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-010

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7818

Contact N. Joseph Verville

Client/Case no CHPRC SDG H4202

Contract No. 33677

Lab sample id S004033-10

Dept sample id 7818-010

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No F10-082

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	10.2	0.71	0.366	1.00		SR	8.92	0.36	114	78-122	80-120
Uranium 233/234	10.3	1.4	0.785	1.00		U	9.28	0.37	111	73-127	80-120
Uranium 235	8.36	1.3	0.268	1.00		U	7.54	0.30	111	70-130	80-120
Uranium 238	9.73	1.4	0.745	1.00		U	10.1	0.40	96	75-125	80-120
Plutonium 238	12.2	1.6	0.291	1.00		PU	11.5	0.46	106	75-125	80-120
Plutonium 239/240	12.3	1.6	0.232	1.00		PU	13.2	0.53	93	78-122	80-120

QC-LCS #72924

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

7818-012 B23K53

DUPLICATE

SDG	7818			Client/Case no	CHPRC SDG H4202
Contact	N. Joseph Verville			Contract	No. 33677
	DUPLICATE		ORIGINAL		
Lab sample id	S004033-12	Lab sample id	S004033-01	Client sample id	B23K53
Dept sample id	7818-012	Dept sample id	7818-001	Location/Matrix	100-K-4 Fish Pond;S1 SOLID
		Received	04/08/10	Collected/Weight	04/01/10 13:40 153 g
% solids	95.8	% solids	95.8	Custody/SAF No	F10-082-018 F10-082

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	0.002	0.15	0.313	1.00	U	SR	0.048	0.22	0.435	U	-		0.3
Uranium 233/234	0.561	0.21	0.168	1.00		U	0.422	0.19	0.147		28	88	1.0
Uranium 235	0.064	0.085	0.162	1.00	U	U	0.023	0.047	0.178	U	-		0.8
Uranium 238	0.509	0.18	0.134	1.00		U	0.269	0.15	0.147		62	92	2.0
Plutonium 238	0	0.063	0.240	1.00	U	PU	0	0.062	0.236	U	-		0
Plutonium 239/240	0.063	0.063	0.240	1.00	U	PU	0	0.062	0.236	U	-		1.4

QC-DUP#1 72926

100-K-4 Waste Site Verification Sampling - Soil

Lab id	EBRLNE
Protocol	CHPRC
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

Test PU Matrix SOLID
SDG 7818
Contact N. Joseph Verville

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4202

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238		Plutonium 239/240	
Preparation batch 7252-021								
S004033-01			7818-001	B23K53	U		U	
S004033-02			7818-002	B23K54	U		U	
S004033-03			7818-003	B23K55	U		U	
S004033-04			7818-004	B23K56	U		U	
S004033-05			7818-005	B23K57	U		U	
S004033-06			7818-006	B23K58	U		U	
S004033-07			7818-007	B23K59	U		U	
S004033-08			7818-008	B23K60	U		U	
S004033-09			7818-009	B23K61	U		U	
S004033-10			7818-010	Lab Control Sample	ok		ok	
S004033-11			7818-011	Method Blank	U		U	
S004033-12			7818-012	Duplicate (S004033-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.00		1.00	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-021			2σ prep error 8.0 %	Reference Lab Notebook No. 7251 pg.021												
S004033-01			B23K53	0.236	0.500			65		107			13	04/14/10	04/14	SS-028
S004033-02			B23K54	0.246	0.500			64		108			13	04/14/10	04/14	SS-029
S004033-03			B23K55	0.320	0.500			77		109			13	04/14/10	04/14	SS-031
S004033-04			B23K56	0.303	0.500			78		109			13	04/14/10	04/14	SS-032
S004033-05			B23K57	0.310	0.500			69		110			13	04/14/10	04/14	SS-033
S004033-06			B23K58	0.290	0.500			68		110			13	04/14/10	04/14	SS-034
S004033-07			B23K59	0.254	0.500			80		109			13	04/14/10	04/14	SS-035
S004033-08			B23K60	0.246	0.500			68		109			13	04/14/10	04/14	SS-036
S004033-09			B23K61	0.300	0.500			69		109			13	04/14/10	04/14	SS-037
S004033-10			Lab Control Sample	0.291	0.500			84		109				04/14/10	04/14	SS-038
S004033-11			Method Blank	0.256	0.500			64		106				04/14/10	04/14	SS-051
S004033-12			Duplicate (S004033-01)	0.240	0.500			69		102			14	04/14/10	04/15	SS-029
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

Test U Matrix SOLID
SDG 7818
Contact N. Joseph Verville

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC
Contract No. 33677
Contract SDG H4202

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-021			2σ prep error 8.0 %		Reference Lab Notebook No. 7251 pg.021											
S004033-01			B23K53	0.178	0.500			77		145			12	04/13/10	04/13	SS-028
S004033-02			B23K54	0.213	0.500			68		145			12	04/13/10	04/13	SS-029
S004033-03			B23K55	0.242	0.500			74		145			12	04/13/10	04/13	SS-031
S004033-04			B23K56	0.270	0.500			64		145			12	04/13/10	04/13	SS-032
S004033-05			B23K57	0.279	0.500			64		146			12	04/13/10	04/13	SS-034
S004033-06			B23K58	0.215	0.500			69		145			12	04/13/10	04/13	SS-035
S004033-07			B23K59	0.055	0.500			55		961			12	04/13/10	04/13	SS-053
S004033-08			B23K60	0.191	0.500			79		145			12	04/13/10	04/13	SS-037
S004033-09			B23K61	0.229	0.500			78		146			12	04/13/10	04/13	SS-038
S004033-10			Lab Control Sample	0.785	0.500			47		168				04/13/10	04/13	SS-063
S004033-11			Method Blank	0.221	0.500			61		168				04/13/10	04/13	SS-064
S004033-12			Duplicate (S004033-01)	0.168	0.500			79		169			12	04/13/10	04/13	SS-065
Nominal values and limits from method				1.00	0.500			30-110		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 5
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD FOR 12 SAMPLES				
	MDA	0.254	±	0.354
	YIELD	68	±	20

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/15/10

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H4202

Test SR Matrix SOLID
SDG 7818
Contact N. Joseph Verville

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client CHPRC
Contract No. 33677
Contract SDG H4202

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
Preparation batch 7252-021						
S004033-01			7818-001	B23K53	U	
S004033-02			7818-002	B23K54	U	
S004033-03			7818-003	B23K55	U	
S004033-04			7818-004	B23K56	U	
S004033-05			7818-005	B23K57	U	
S004033-06			7818-006	B23K58	U	
S004033-07			7818-007	B23K59	U	
S004033-08			7818-008	B23K60	U	
S004033-09			7818-009	B23K61	U	
S004033-10			7818-010	Lab Control Sample	ok	
S004033-11			7818-011	Method Blank	U	
S004033-12			7818-012	Duplicate (S004033-01)	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.00	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7252-021			2σ prep error 10.4 % Reference Lab Notebook No. 7251 pg.021													
S004033-01			B23K53	0.435	1.00			66		100			12	04/13/10	04/13	GRB-217
S004033-02			B23K54	0.304	1.00			93		100			12	04/13/10	04/13	GRB-220
S004033-03			B23K55	0.586	1.00			49		100			12	04/13/10	04/13	GRB-221
S004033-04			B23K56	0.367	1.00			75		100			12	04/13/10	04/13	GRB-222
S004033-05			B23K57	0.331	1.00			87		100			12	04/13/10	04/13	GRB-223
S004033-06			B23K58	0.295	1.00			96		100			12	04/13/10	04/13	GRB-224
S004033-07			B23K59	0.549	1.00			55		100			12	04/13/10	04/13	GRB-225
S004033-08			B23K60	0.504	1.00			66		100			12	04/13/10	04/13	GRB-230
S004033-09			B23K61	0.355	1.00			83		100			12	04/13/10	04/13	GRB-227
S004033-10			Lab Control Sample	0.366	1.00			66		100				04/13/10	04/13	GRB-217
S004033-11			Method Blank	0.578	1.00			53		100				04/13/10	04/13	GRB-229
S004033-12			Duplicate (S004033-01)	0.313	1.00			93		100			12	04/13/10	04/13	GRB-230
Nominal values and limits from method				1.00	1.00			40-110		100			180			

Lab id EBRLNE
Protocol CHPRC
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 04/15/10

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100515
Matrix: SOLID
Test: Gamma Energy Analysis-grd H2O

Sample Date: 04/01/10
Receive Date:04/02/10

Lab ID: W10GR00924

BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
DUP	Cobalt-60	10198-40-0	U1.477e-2		RPD			n/a	20.000		04/05/10
DUP	Cesium-137	10045-97-3	U2.165e-2		RPD			n/a	20.000		04/05/10
DUP	Europium-152	14683-23-9	U-4.011e-2		RPD			n/a	20.000		04/05/10
DUP	Europium-154	15585-10-1	U4.439e-3		RPD			n/a	20.000		04/05/10
DUP	Europium-155	14391-16-3	U6.783e-2		RPD			n/a	20.000		04/05/10

BATCH QC

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Cobalt-60	10198-40-0	U-2.282e-3	n/a	pCi/g	-10.000	1000.000				04/07/10
BLANK	Cesium-137	10045-97-3	U7.345e-4	n/a	pCi/g	-10.000	1000.000				04/07/10
BLANK	Europium-152	14683-23-9	U-4.859e-4	n/a	pCi/g	-10.000	1000.000				04/07/10
BLANK	Europium-154	15585-10-1	U-6.85e-4	n/a	pCi/g	-10.000	1000.000				04/07/10
BLANK	Europium-155	14391-16-3	U1.36e-3	n/a	pCi/g	-10.000	1000.000				04/07/10
LCS	Cobalt-60	10198-40-0	10340	104.024	% Recov	80.000	120.000				04/08/10
LCS	Cesium-137	10045-97-3	6469	107.103	% Recov	80.000	120.000				04/08/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100646

QC Batch 107682
Associated Samples 100646001

Test Gamma Energy Analysis-general

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
IBLANK			**QC Sample #26044**								
Cesium-137	10045-97-3		-3.0	pCi/L						U	04/05/10
Cobalt-60	10198-40-0		-0.14	pCi/L						U	04/05/10
Europium-152	14683-23-9		10	pCi/L						U	04/05/10
Europium-154	15585-10-1		6.8	pCi/L						U	04/05/10
Europium-155	14391-16-3		1.4	pCi/L						U	04/05/10
LCS			**QC Sample #26045**								
Cesium-137	10045-97-3		6400	pCi/sample	105.6	80 - 120					04/06/10
Cobalt-60	10198-40-0		10000	pCi/sample	105.2	80 - 120					04/06/10
DUP			**QC Sample #26046**								
			Original 100632001								
Cesium-137	10045-97-3		-0.16	pCi/L			231.40	-20 - 20	*	U	04/05/10
Cobalt-60	10198-40-0		0.59	pCi/L			143.70	-20 - 20	*	U	04/05/10
Europium-152	14683-23-9		-9.7	pCi/L			-29.10	-20 - 20	*	U	04/05/10
Europium-154	15585-10-1		7.8	pCi/L			-1760.00	-20 - 20	*	U	04/05/10
Europium-155	14391-16-3		13	pCi/L			7.40	-20 - 20		U	04/05/10