REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
09/06/2011	
3. Project No.	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Data Validation Report for CH2M Hill Plateau Remediation Company: VSR11-054, Project 100K Area AH	100K Area AH, Waste Site 100-K-77	D. L. Klages	100-K Soil Remediation	(509)942-3947

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date / Organization Manager (optional) (print and sign)	09/06/2011 Date; Deanna L. Klages Reviewer/Point of Contact (print and sign); Deanna L. Klages Author/Originator (print and sign)	09/06/2011 Date; Deanna L. Klages Reviewer/Point of Contact (print and sign); Deanna L. Klages Author/Originator (print and sign)

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	Title: please add "Waste Site 100-K-77" after "Project 100K Area AH" and carry this throughout the validation in the reports where Area AH is mentioned.	This sampling activity was only for waste site 100-K-77, rather than the whole area which still remains to be sampled.	Title: please add "Waste Site 100-K-77" after "Project 100K Area AH" and carry this throughout the validation in the report where Area AH is mentioned.	Y	Changes made	Closed

CHPRC - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
08/29/2011	
3. Project No.	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
VSR11-054		Scot Fitzgerald	Analytical Support Group	2753/373-7495

17. Comment Submittal Approval

Date _____ Organization Manager (optional) (print and sign) _____

10. Agreement With Indicated Comment Disposition(s)

Scot Fitzgerald
Reviewer/Point of Contact (print and sign)

08/29/2011
Date

Author/Originator (print and sign)

11. CLOSED

Scot Fitzgerald
Reviewer/Point of Contact (print and sign)

8/30/2011
Date

Author/Originator (print and sign)

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if NOT accepted)	16. Status
1	On page 123 of 244 the Li flags for B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1 and B2FPM2 do not match the discussion in narrative (pages 117,118 of 244) and the appended data report.		Change Li flag for samples B2FPL7, B2FPL8, B2FPL9, B2FPM0 and B2FPM1 from UJ to J- and the Li flag for B2FPM2 from J to UJ.	Y	Changes made	closed

REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
08/30/2011	
3. Project No.	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
VSR11-054, Data Validation Report for CHPRC - Project 100K Area AH, Chemical & Radiochemical Validation - Level C	S&GRP Sample Data Group (SDG); WSCF112777 and SL1099	JA Edwards	Environmental Quality Assurance (EQA)	2420 Stevens Rm. 345 376-4324

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date / Organization Manager (optional) (print and sign)	JA Edwards (Reviewer/Point of Contact (print and sign))	JA Edwards (Reviewer/Point of Contact (print and sign))
	08/30/2011 (Date)	08/30/2011 (Date)
	Author/Originator (print and sign)	Author/Originator (print and sign)

12. Item	13a. Comments	13b. Basis	13c. Recommendation	14. Reviewer Concurrence Required (Y or N)	15. Disposition (provide justification if **NOT** accepted)	16. Status
1	Inorganic Data Qualification Summary (Page 123 of 244) Analyte(s) for Li (BOTH entries) DV Flag(s) switch 'UJ' for 'J' for B2FPM2 Change 'UJ' to 'J-' for B2FPL7, B2FPL8, B2FPL9, B2FPM0, and B2FPM1.	Incorrect reporting	Change entries as indicated	Y	Changes made	Closed

Documents:

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, September 2009
GRP-GD-002, Rev. 0, Change 0, *Data Validation for Radiochemical Analyses*, August 2010
GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010

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

VSR11-054
Project 100K Area AH Waste Site 100-K-77

Chemical & Radiochemical Validation - Level C

Validation Performed By: Carl Schlosser **Date:** 8-26-2011

TABLE OF CONTENTS

Date: 26 August 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100K Area AH Waste Site 100-K-77
Subject: Semivolatile Organics - Sample Data Group (SDG) WSCF112777

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF112777 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical method is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2FPL7	7/26/2011	Soil	C	8270D
B2FPL8	7/26/2011	Soil	C	8270D
B2FPL9	7/26/2011	Soil	C	8270D
B2FPM0	7/26/2011	Soil	C	8270D
B2FPM1	7/26/2011	Soil	C	8270D
B2FPM2	7/25/2011	Soil	C	8270D

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 semivolatile organics are extraction within 14 days of sample collection and analysis within 40 days of sample extraction. Sample preservation requires chilling to 4 degrees Celsius.

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

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the laboratory control sample accuracy limits are 50% to 150% and the matrix spike sample accuracy limits are ones specified by the DV procedure. The limits for reported analytes not listed in the SAP are specified by the DV procedure. The surrogate accuracy limits used for data validation were the statistical ones established by the analytical laboratory.

Surrogates

All surrogate recoveries were acceptable.

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

All MS/MSD recoveries were acceptable with the following exception. The MS recovery for pyrene was below the lower acceptance limit. The pyrene results for all samples were non-detects and should be qualified as estimates and flagged "UJ."

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 exceed the limits and have associated results <5X the reporting limits with differences <2X the reporting limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD relative percent difference values were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

All reported sample MDLs were below the CRDLs.

- **Completeness**

SDG WSCF112777 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

A minor deficiency leading to qualification of all pyrene sample results as estimates was due to a MS recovery infraction.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

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

Appendix 2

Summary of Data Qualification

Semivolatile Organics Data Qualification Summary			
SDG: WSCF112777	Reviewer: AQA	Project: 100K Area AH Waste Site 100-K-77	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Pyrene	UJ	B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2	Low MS recovery

Comments: None

Appendix 3

Annotated Laboratory Reports

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<200	UJ	ug/kg	1	200	800	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<400		ug/kg	1	400	800	08/03/11

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

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < lowest calibration but >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

LS 8-26-2011

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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J - Analyte < lowest calibration but >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Decane	124-18-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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N - Presumed evidence based on MS library search(GC/MS only)

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyridine	110-86-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<200		ug/kg	1	200	2.E3	08/03/11

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

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
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J - Analyte < lowest calibration but >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<200	UJ	ug/kg	1	200	800	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<400		ug/kg	1	400	800	08/03/11

MDL = Minimum Detection
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DF = Dilution Factor
+ - Indicates more than nine qualifier

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LS
8-26-2011

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Decane	124-18-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyridine	110-86-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<200		ug/kg	1	200	2.E3	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<200	UJ	ug/kg	1	200	800	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<400		ug/kg	1	400	800	08/03/11

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LS
8-26-2011

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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Decane	124-18-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyridine	110-86-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<200		ug/kg	1	200	2.E3	08/03/11

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Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Phenol	108-95-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<300	UJ	ug/kg	1	300	1.E3	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<400		ug/kg	1	400	1.E3	08/03/11

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LS
8-26-2011

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Anthracene	120-12-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Chrysene	218-01-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Isophorone	78-59-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Fluorene	86-73-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
n-Decane	124-18-5	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<400		ug/kg	1	400	1.E3	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11

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Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Pyridine	110-86-1	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<300		ug/kg	1	300	1.E3	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<300		ug/kg	1	300	2.E3	08/03/11

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Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<200	UJ	ug/kg	1	200	800	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<400		ug/kg	1	400	800	08/03/11

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LS
8-26-2011

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

B - Analyte was detected in both the BLANK and SAMPLE
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < lowest calibration but >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Decane	124-18-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyridine	110-86-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<200		ug/kg	1	200	2.E3	08/03/11

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J - Analyte < lowest calibration but >= MDL.
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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**07/28/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyrene	129-00-0	LA-523-456	UT	<200	UJ	ug/kg	1	200	800	08/03/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chloroaniline	106-47-8	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11

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N - Presumed evidence based on MS library search(GC/MS only)

LS 8-26-2011

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Bis(1-Chloro-2-propyl)ether	108-60-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Diethyl phthalate	84-66-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Carbazole	86-74-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Decane	124-18-5	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
n-Dodecane	112-40-3	LA-523-456	U	<300		ug/kg	1	300	800	08/03/11
Benzyl alcohol	100-51-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11

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

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
2-Butoxyethanol	111-76-2	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Tributyl phosphate	126-73-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
2-Naphthylamine	91-59-8	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Cyclohexanone	108-94-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Pyridine	110-86-1	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
1,2,4-Trimethylbenzene	95-63-6	LA-523-456	U	<200		ug/kg	1	200	800	08/03/11
Benzoic Acid	65-85-0	LA-523-456	U	<200		ug/kg	1	200	2.E3	08/03/11

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Narrative

Attachment 2
Narrative
WSCF112777

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. 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, U and J) may be applicable to this report, as appropriate

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

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

1

Attachment 2
Narrative
WSCF112777

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):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable 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):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Manganese, and Antimony – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Organic Comments

Semi-VOA – 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):

- Pyrene did not meet the MS and or MSD acceptance limits. Sample results for this analytes were "T" Flagged.
- All other applicable QC controls are within the established limits.

Radiochemistry Comments

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

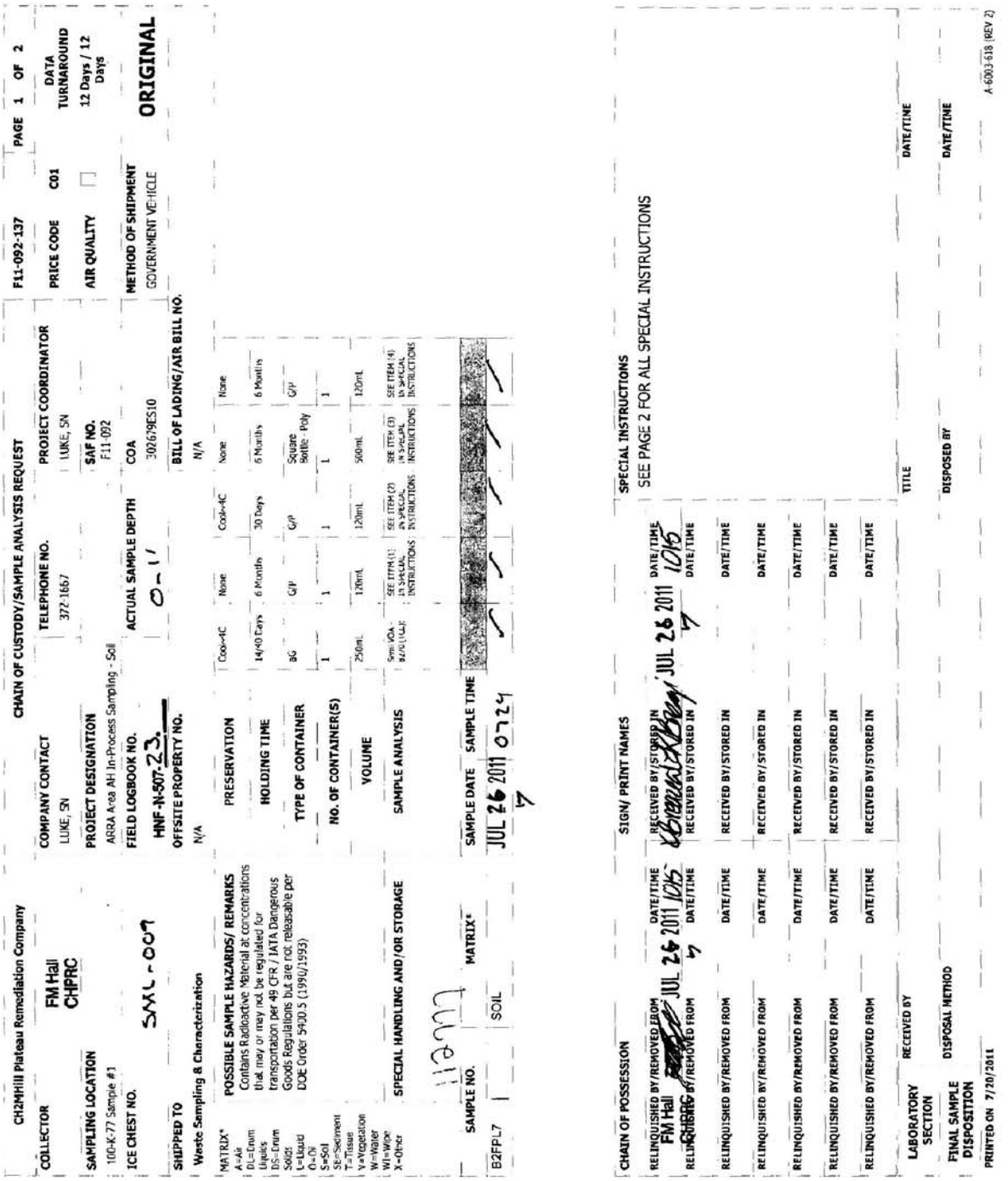
- Gamma Energy Analysis:
  - Cesium-137 – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results below 5X the minimum detectable activity. No flags issued.
  - All other applicable QC controls are within the established limits.

2

- Gross Alpha / Gross Beta:
    - All applicable QC controls are within the established limits.

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

Sample Receipt



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #1

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SXSL-009

FIELD LOGBOOK NO.: HNF-N-307-23.

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

MATRIX* A=Air DI=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

PRESERVATION	Cool-4C	None	Cool-4C	None	None	None		
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months	6 Months		
TYPE OF CONTAINER	BG	G/P	G/P	Square Bottle - Poly	G/P			
NO. OF CONTAINER(S)	1	1	1	1	1			
VOLUME	250mL	120mL	120mL	500mL	120mL			
SAMPLE ANALYSIS	Sm VOA - 8270 (1)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS			

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2FPL7	SOIL	JUL 26 2011	0724

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM	FM Hall	JUL 26 2011 1015
RECEIVED BY/STORED IN		DATE/TIME
RELINQUISHED BY/REMOVED FROM		DATE/TIME
RECEIVED BY/STORED IN		DATE/TIME
RELINQUISHED BY/REMOVED FROM		DATE/TIME
RECEIVED BY/STORED IN		DATE/TIME
RELINQUISHED BY/REMOVED FROM		DATE/TIME
RECEIVED BY/STORED IN		DATE/TIME
RELINQUISHED BY/REMOVED FROM		DATE/TIME
RECEIVED BY/STORED IN		DATE/TIME
RELINQUISHED BY/REMOVED FROM		DATE/TIME
RECEIVED BY/STORED IN		DATE/TIME

LABORATORY SECTION RECEIVED BY — TITLE — DATE/TIME

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

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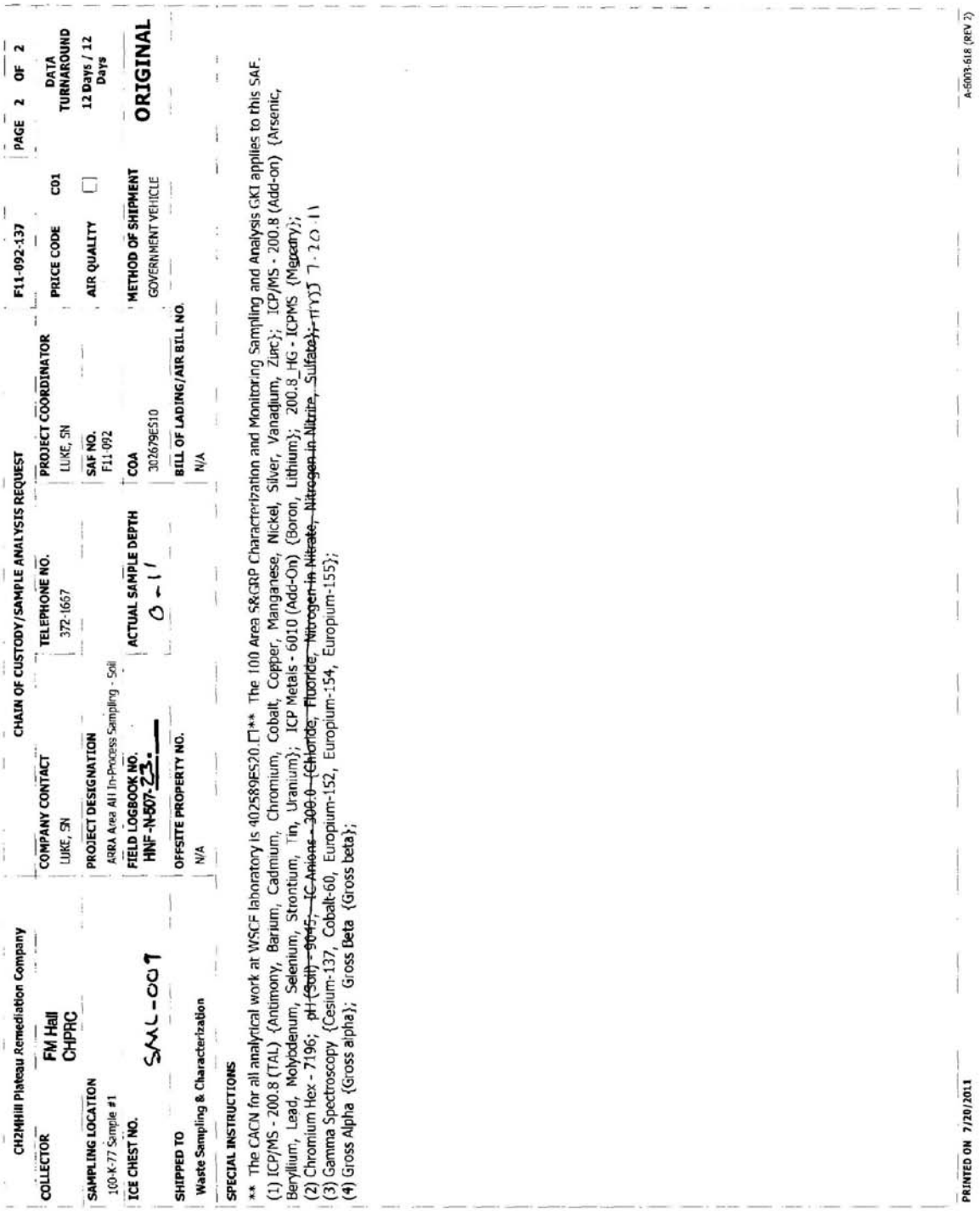
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #1

PROJECT DESIGNATION: ARRA Area All In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SAL-001

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679E510

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKT 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen-in Nitrate, Nitrogen-in Nitrite, Sulfate)~~; TTO 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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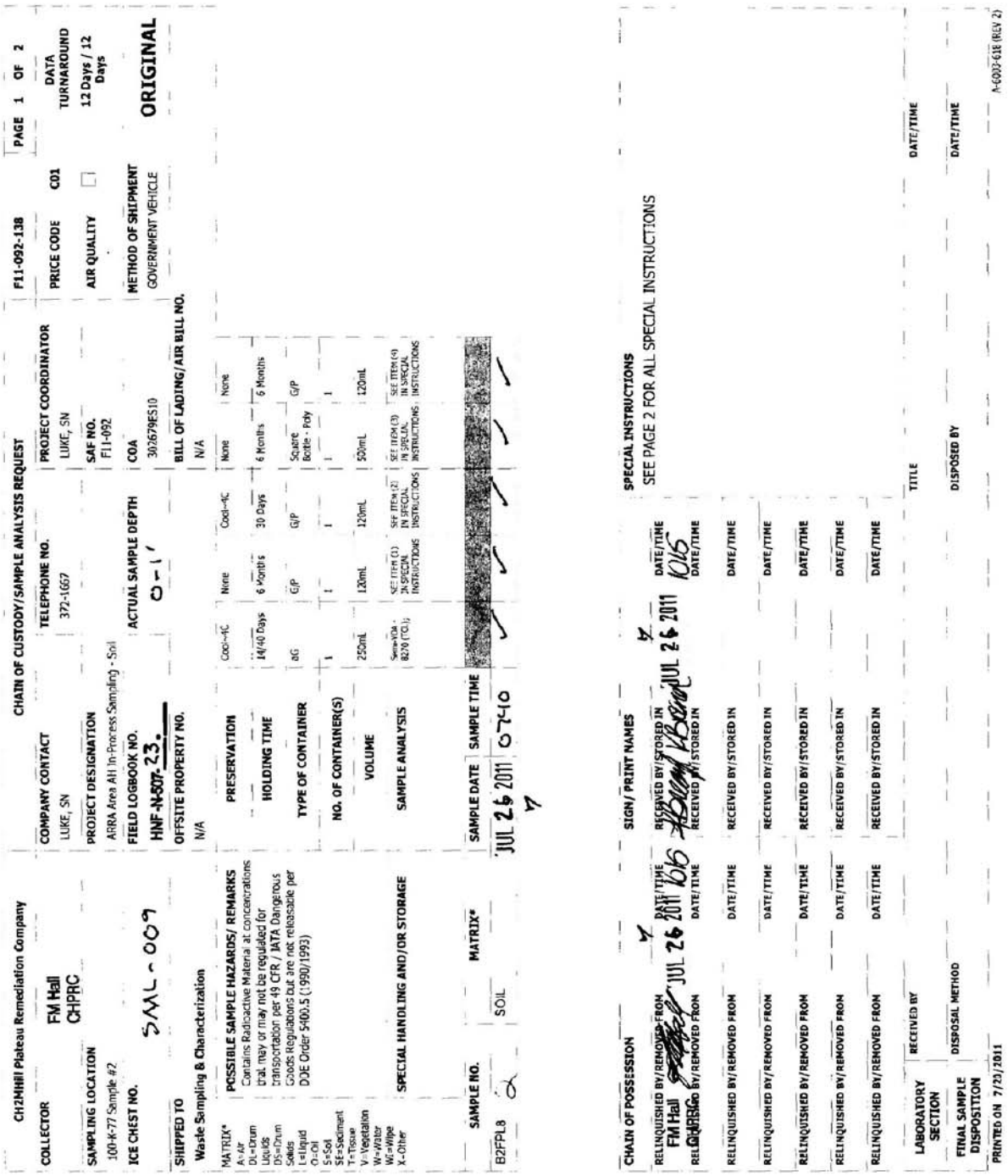

CH2MHill Plateau Remediation Company	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**			**F11-092-138**	**PAGE 1 OF 2**
COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01	**DATA TURNAROUND** 12 Days / 12 Days
SAMPLING LOCATION 100-K-77 Sample #2	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-N-507-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	**ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2FPL8 2	SOIL	JUL 26 2011 7	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	DATE/TIME 7 JUL 26 2011 1016	RECEIVED BY/STORED IN	DATE/TIME 7 JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-138	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #2	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL-009	FIELD LOGBOOK NO.: HNF-N-507-23.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ TMD 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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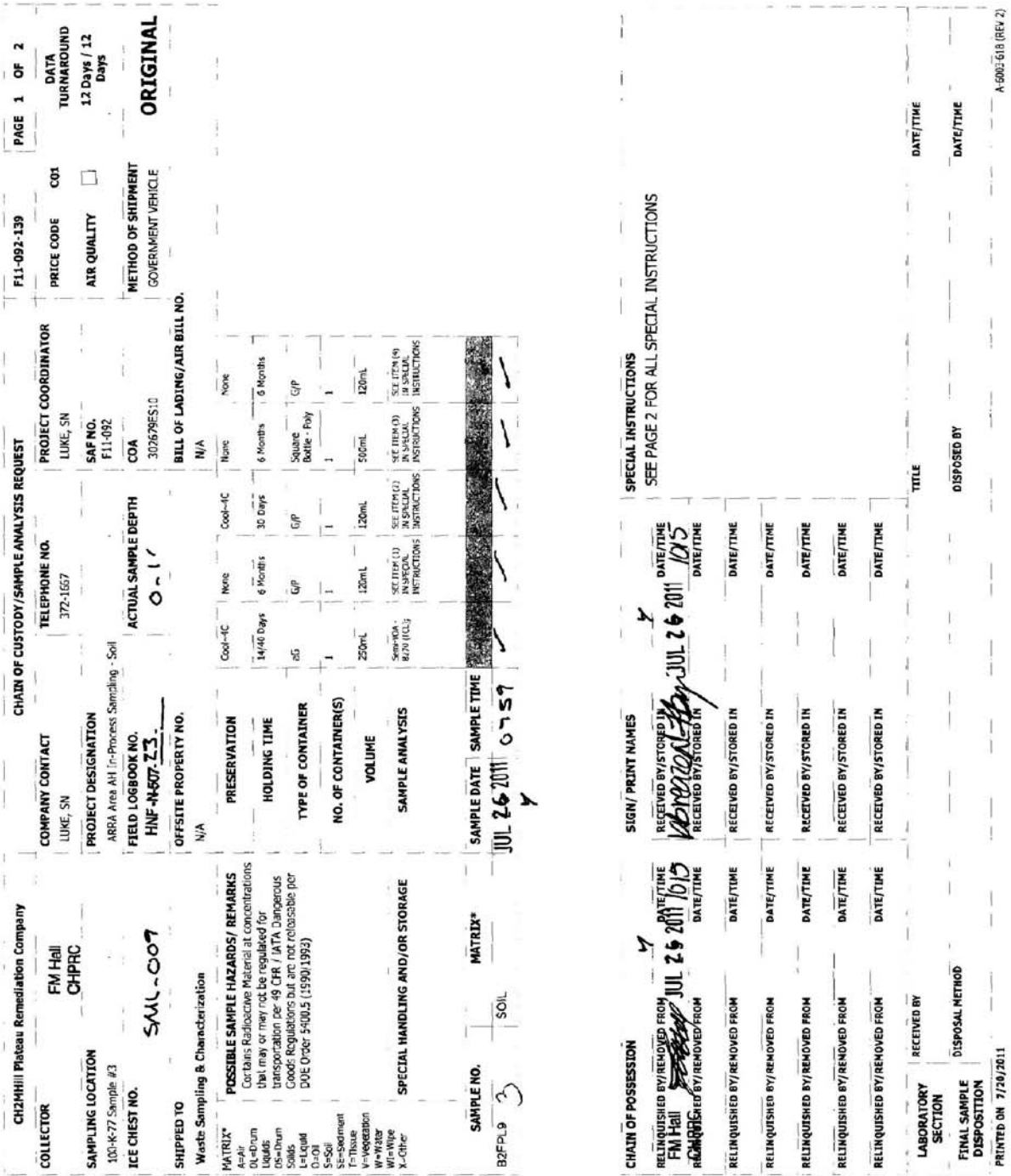

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 1 OF 2

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01
SAMPLING LOCATION 100-K-77 Sample #3	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
ICE CHEST NO. SML-007	**FIELD LOGBOOK NO.** HNF-N-507-23	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

DATA TURNAROUND
12 Days / 12 Days

ORIGINAL

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPL9 3	SOIL	JUL 26 2011 Y	0759	✓	✓	✓	✓	✓

CHAIN OF POSSESSION **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM Y FM Hall CHPRC	**DATE/TIME** JUL 26 2011 1015	**RECEIVED BY/STORED IN** Y	**DATE/TIME** JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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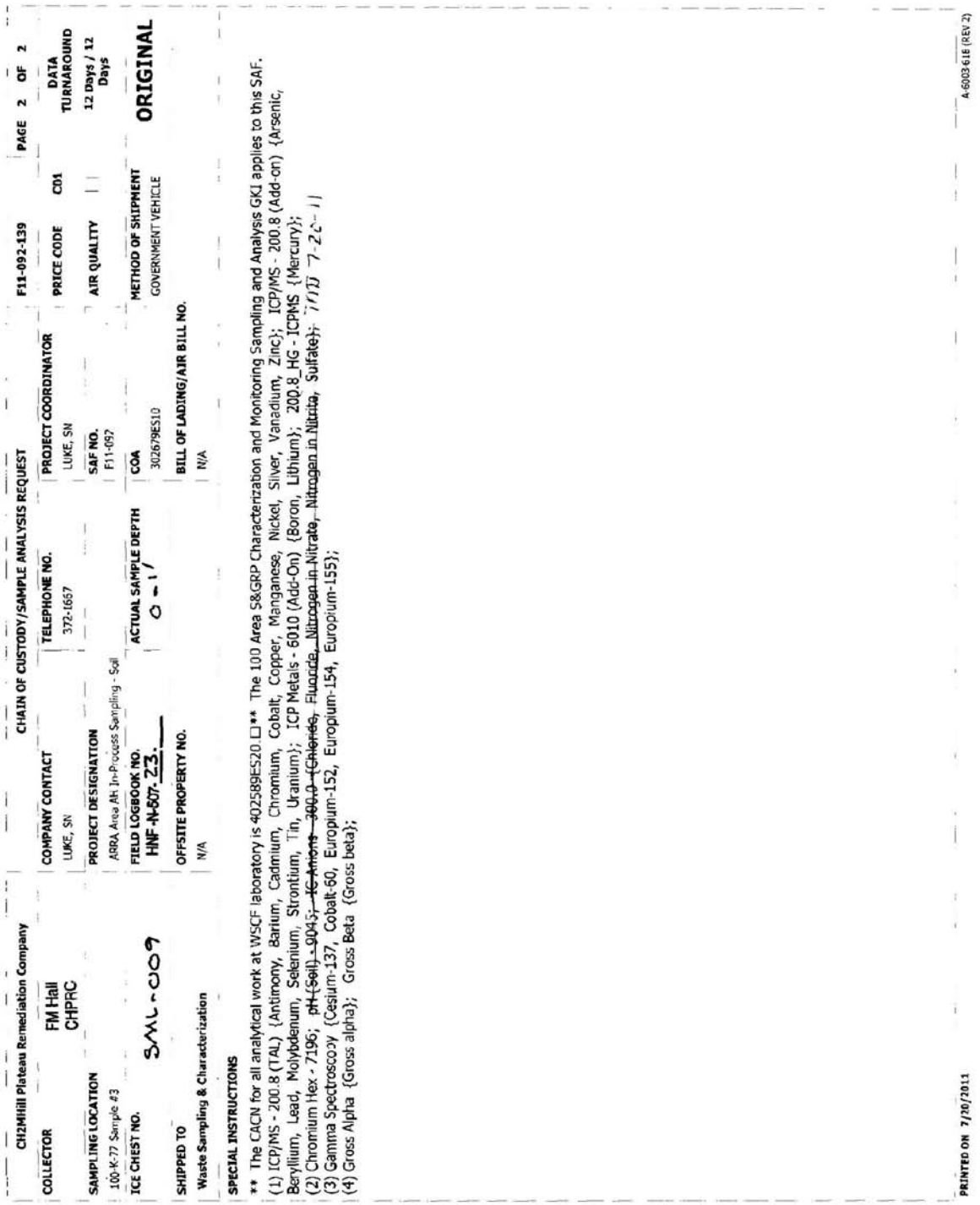
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SML-009

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKJ 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 - (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)~~; 7/13 7-26-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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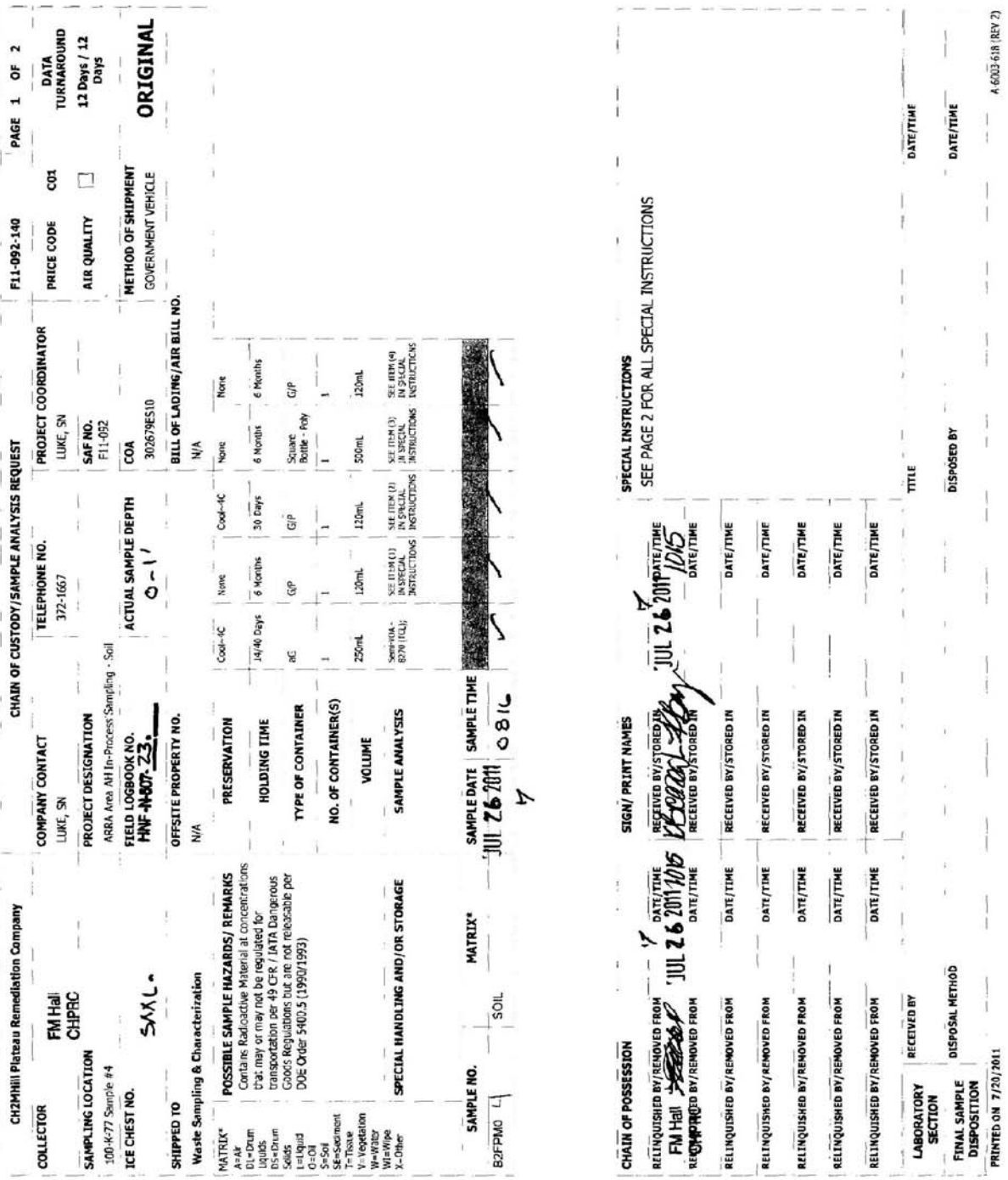

CH2MHill Plateau Remediation Company	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**		**F11-092-140**	**PAGE 1 OF 2**
COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01
SAMPLING LOCATION 100-K-77 Sample #4	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
ICE CHEST NO. SAXL-	**FIELD LOGBOOK NO.** HNF-N-807- 23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
SHIPPED TO **Waste Sampling & Characterization**	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

DATA TURNAROUND
12 Days / 12 Days

ORIGINAL

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPM0 4	SOIL	JUL 26 2011 7	0816	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** 7 JUL 26 2011 1015	**RECEIVED BY/STORED IN**	**DATE/TIME** 7 JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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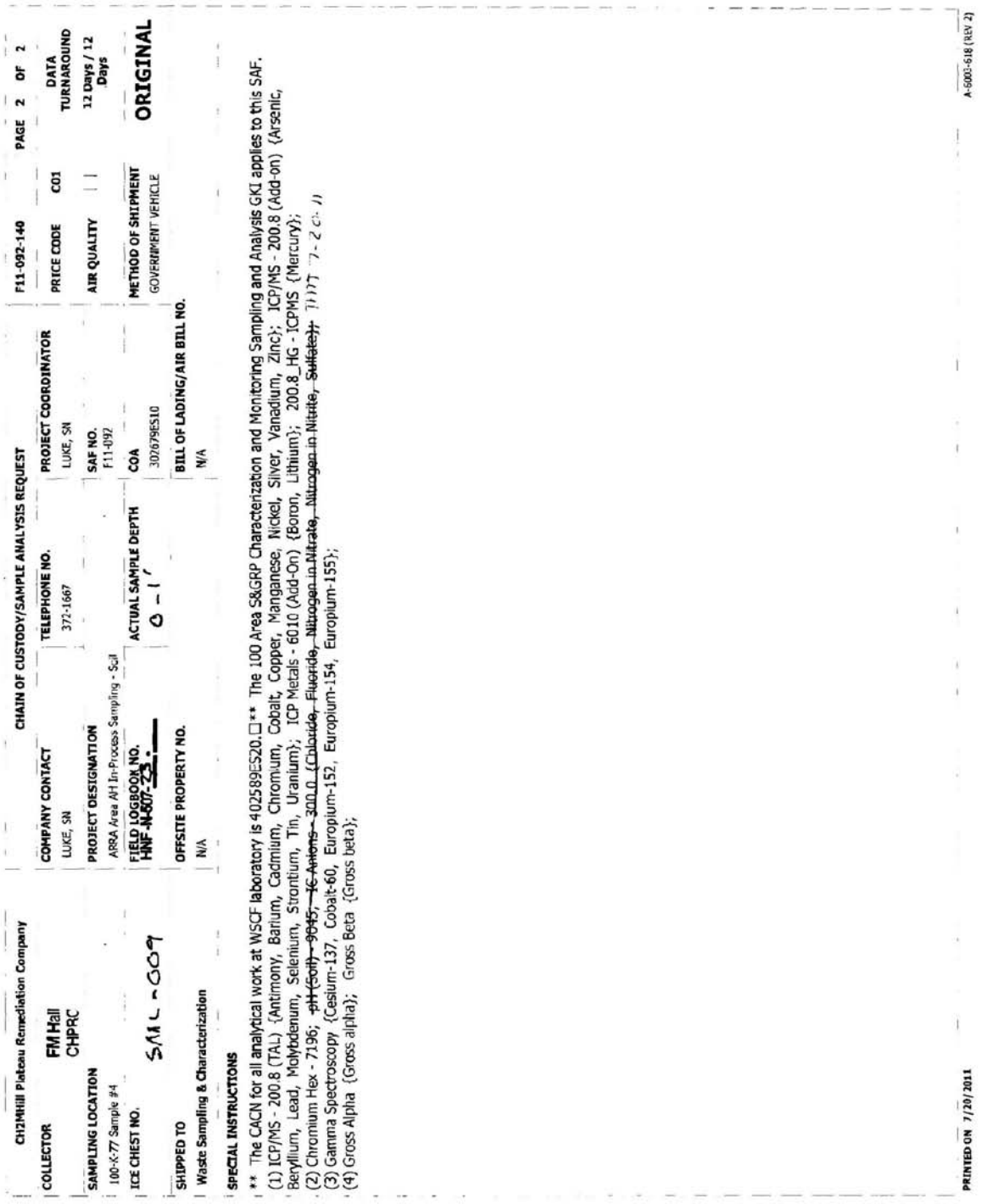
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-140 PAGE 2 OF 2

COLLECTOR: FM Hall, CHPRC
COMPANY CONTACT: LUKE, SN
TELEPHONE NO.: 372-1667
PROJECT COORDINATOR: LUKE, SN
PRICE CODE: C01
DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #4
PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil
SAF NO.: F11-092
AIR QUALITY:
METHOD OF SHIPMENT: GOVERNMENT VEHICLE
ORIGINAL

ICE CHEST NO.: SAL-1509
FIELD LOGBOOK NO.: HNF-N-807-23
ACTUAL SAMPLE DEPTH: 0 - 1'
COA: 302679ES10
BILL OF LADING/AIR BILL NO.: N/A

SHIPPED TO: Waste Sampling & Characterization
OFFSITE PROPERTY NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_Hg - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7199 7-2 ck
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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Friday, July 29, 2011 8:36:30 AM
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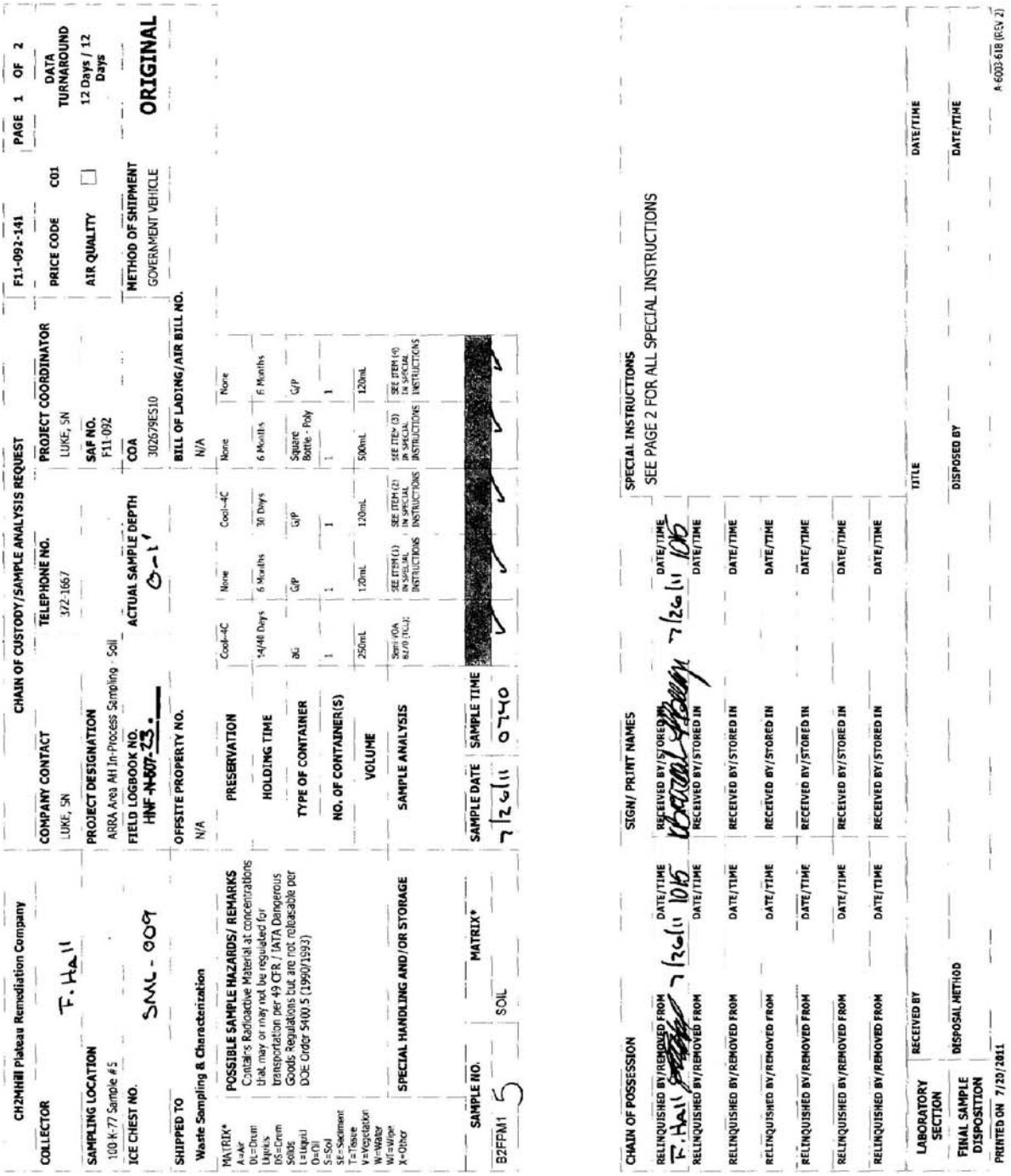
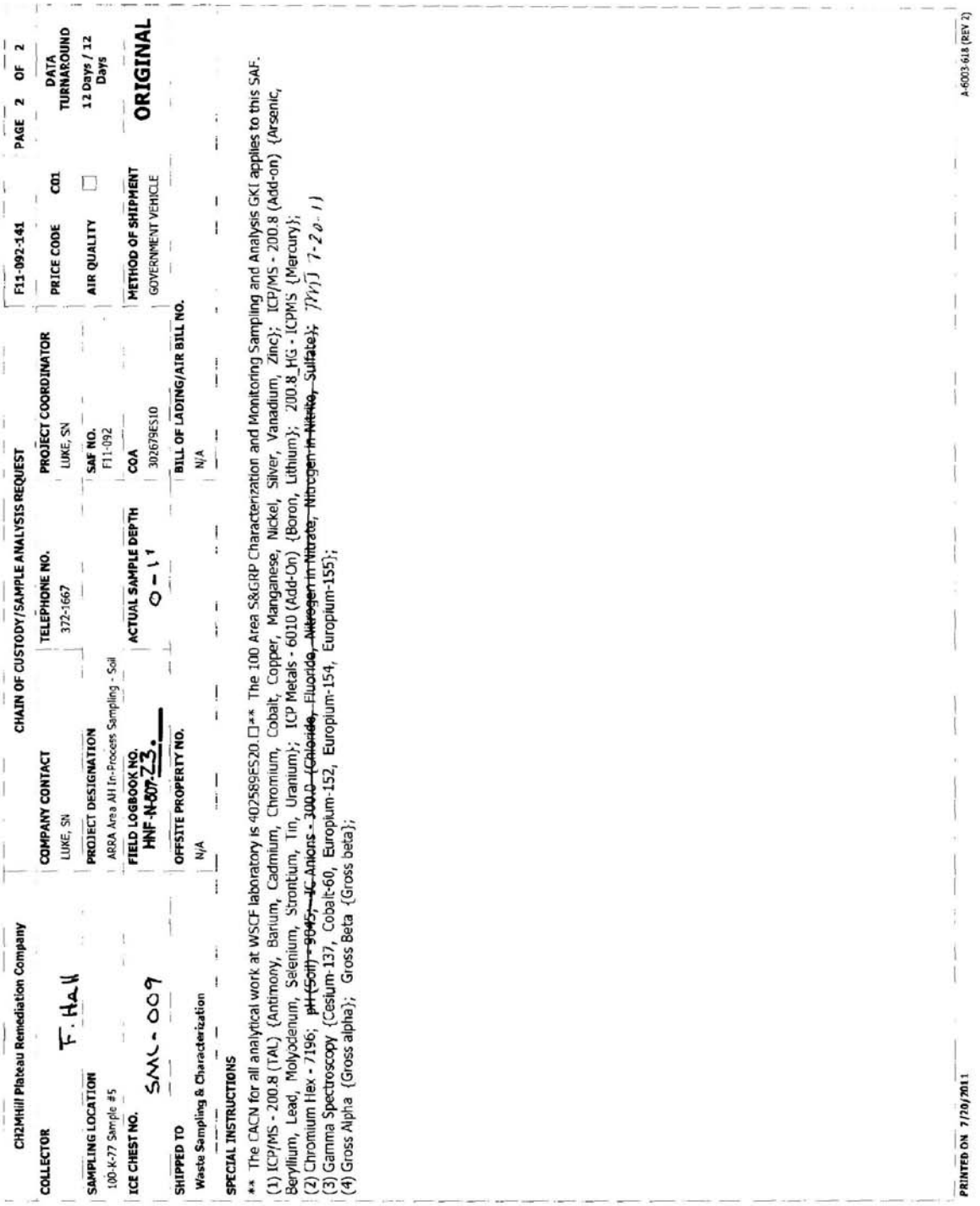
Sample Receipt

Chain of Custody



Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 2 OF 2

COLLECTOR: F. Hall

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #5

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SMC-009

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20. ☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7196 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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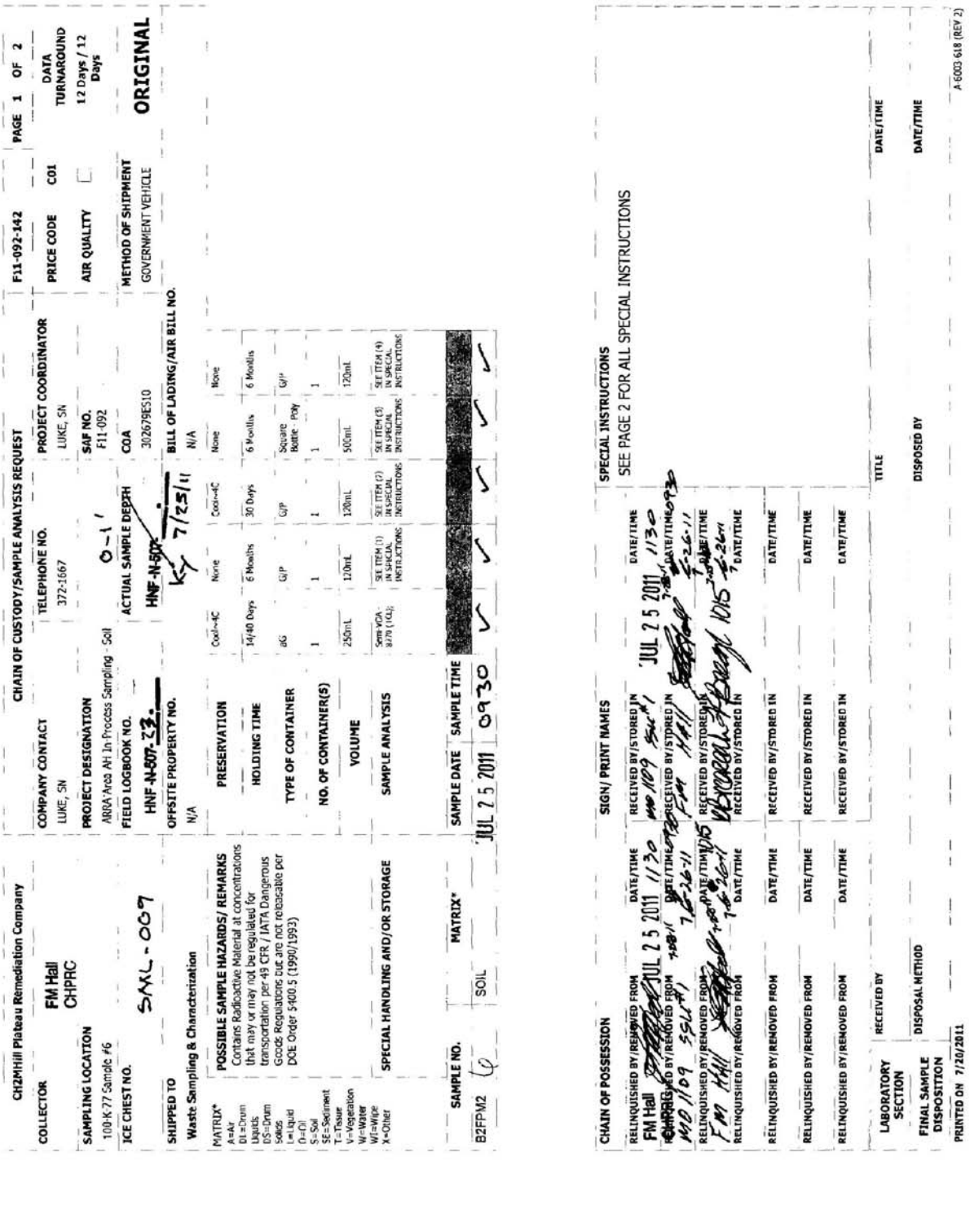
A-6003-618 (REV 2)

Friday, July 29, 2011 8:36:30 AM

Page 12 of 14

Sample Receipt

Chain of Custody

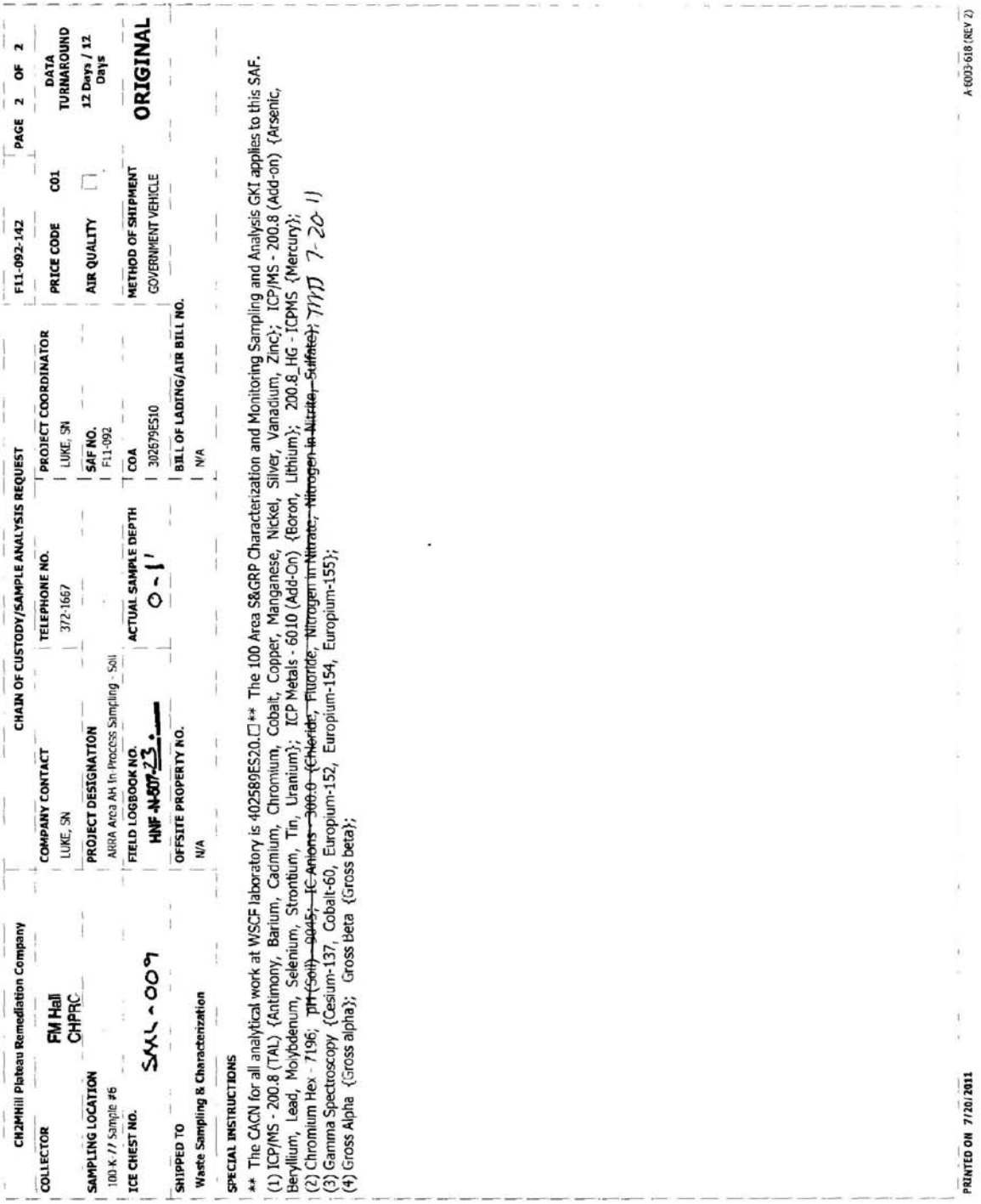


Friday, July 29, 2011 8:36:30 AM

Page 13 of 14

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-142

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100 K // Sample #6

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

ICE CHEST NO.: SAL-0009

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 3026795I0

BILL OF LADING/AIR BILL NO.: N/A

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};~~ TTP 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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A 6003-618 (REV 2)

Friday, July 29, 2011 8:36:30 AM

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Appendix 5

Data Validation Supporting Documentation

Appendix A - Chemical Data Validation Checklist

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100K Area AH Waste Site 100-K-77			DATA PACKAGE: VSR11-054		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 8-26-2011	
			SDG: WSCF112777		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270 X		SW-846 8270 (TCLP)
SAMPLES/MATRIX Soil samples B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable?	Yes	No	N/A
Initial calibrations acceptable?	Yes	No	N/A
Continuing calibrations acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Calculation check acceptable?	Yes	No	N/A

Comments:

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

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

Comments: None

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

Surrogates/system monitoring compounds analyzed?	(Yes)	No	N/A
Surrogate/system monitoring compound recoveries acceptable?	(Yes)	No	N/A
Surrogates traceable? (Levels D, E)	Yes	No	(N/A)
Surrogates expired? (Levels D, E)	Yes	No	(N/A)
MS/MSD samples analyzed?	(Yes)	No	N/A
MS/MSD results acceptable?	Yes	(No)	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards? (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:

Pyrene MS %R = 76%

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

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

MS/MSD RPD values 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. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No (N/A)

Internal standard areas acceptable? ..... Yes No (N/A)

Internal standard retention times acceptable? ..... Yes No (N/A)

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

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments: None

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

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

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

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

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

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

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No (N/A)

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

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

Comments: None

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Comments (attach additional sheets as necessary): None

Appendix 6

Additional Documentation Requested By Client

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

QC Batch 187052 **Test** SW-846 8270D Semivolatiles
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61642**						
4-Nitrophenol	100-02-7		<200	ug/kg				U	08/03/11
1,4-Dichlorobenzene	106-46-7		<200	ug/kg				U	08/03/11
Phenol	108-95-2		<200	ug/kg				U	08/03/11
1,2,4-Trichlorobenzene	120-82-1		<200	ug/kg				U	08/03/11
2,4-Dinitrotoluene	121-14-2		<200	ug/kg				U	08/03/11
Pyrene	129-00-0		<200	ug/kg				U	08/03/11
4-Chloro-3-methylphenol	59-50-7		<200	ug/kg				U	08/03/11
n-Nitroso-di-n-propylamine	621-64-7		<200	ug/kg				U	08/03/11
Acenaphthene	83-32-9		<200	ug/kg				U	08/03/11
Pentachlorophenol	87-86-5		<200	ug/kg				U	08/03/11
2-Chlorophenol	95-57-8		<200	ug/kg				U	08/03/11
4-Nitroaniline	100-01-6		<200	ug/kg				U	08/03/11
4-Bromophenyl-phenylether	101-55-3		<200	ug/kg				U	08/03/11
2,4-Dimethylphenol	105-67-9		<200	ug/kg				U	08/03/11
4-Chloroaniline	106-47-8		<300	ug/kg				U	08/03/11
Bis(1-Chloro-2-propyl)ether	108-60-1		<200	ug/kg				U	08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
Bis-(2-Chloroethyl) ether	111-44-4		<200	ug/kg				U	08/03/11
Bis-(2-Chloroethoxy)methane	111-91-1		<200	ug/kg				U	08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7		<200	ug/kg				U	08/03/11
Di-n-octylphthalate	117-84-0		<200	ug/kg				U	08/03/11
Hexachlorobenzene	118-74-1		<200	ug/kg				U	08/03/11
Anthracene	120-12-7		<200	ug/kg				U	08/03/11
2,4-Dichlorophenol	120-83-2		<200	ug/kg				U	08/03/11
Dimethylphthalate	131-11-3		<200	ug/kg				U	08/03/11
Dibenzofuran	132-64-9		<200	ug/kg				U	08/03/11
Benzo(g,h,i)perylene	191-24-2		<200	ug/kg				U	08/03/11
Indeno(1,2,3-cd)pyrene	193-39-5		<200	ug/kg				U	08/03/11
Benzo(b)fluoranthene	205-99-2		<200	ug/kg				U	08/03/11
Fluoranthene	206-44-0		<200	ug/kg				U	08/03/11
Benzo(k)fluoranthene	207-08-9		<200	ug/kg				U	08/03/11
Acenaphthylene	208-96-8		<200	ug/kg				U	08/03/11
Chrysene	218-01-9		<200	ug/kg				U	08/03/11
Benzo(a)pyrene	50-32-8		<200	ug/kg				U	08/03/11
2,4-Dinitrophenol	51-28-5		<200	ug/kg				U	08/03/11
Dibenzo(a,h)anthracene	53-70-3		<200	ug/kg				U	08/03/11
4,6-Dinitro-2-methylphenol	534-52-1		<200	ug/kg				U	08/03/11
1,3-Dichlorobenzene	541-73-1		<200	ug/kg				U	08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Benzo(a)anthracene	56-55-3		<200	ug/kg					U	08/03/11
2,6-Dinitrotoluene	606-20-2		<200	ug/kg					U	08/03/11
4-Chlorophenyl-phenylether	7005-72-3		<200	ug/kg					U	08/03/11
Hexachlorocyclopentadiene	77-47-4		<200	ug/kg					U	08/03/11
Isophorone	78-59-1		<200	ug/kg					U	08/03/11
Diethyl phthalate	84-66-2		<200	ug/kg					U	08/03/11
Di-n-butylphthalate	84-74-2		<200	ug/kg					U	08/03/11
Phenanthrene	85-01-8		<200	ug/kg					U	08/03/11
Butylbenzylphthalate	85-68-7		<200	ug/kg					U	08/03/11
n-Nitrosodiphenylamine	86-30-6		<200	ug/kg					U	08/03/11
Fluorene	86-73-7		<200	ug/kg					U	08/03/11
Carbazole	86-74-8		<200	ug/kg					U	08/03/11
Hexachlorobutadiene	87-68-3		<200	ug/kg					U	08/03/11
2-Nitroaniline	88-74-4		<200	ug/kg					U	08/03/11
2-Nitrophenol	88-75-5		<200	ug/kg					U	08/03/11
Naphthalene	91-20-3		<200	ug/kg					U	08/03/11
2-Methylnaphthalene	91-57-6		<200	ug/kg					U	08/03/11
2-Chloronaphthalene	91-58-7		<200	ug/kg					U	08/03/11
3,3-Dichlorobenzidine	91-94-1		<200	ug/kg					U	08/03/11
2-Methylphenol	95-48-7		<200	ug/kg					U	08/03/11
1,2-Dichlorobenzene	95-50-1		<200	ug/kg					U	08/03/11
2,4,5-Trichlorophenol	95-95-4		<200	ug/kg					U	08/03/11
Nitrobenzene	98-95-3		<200	ug/kg					U	08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
3-Nitroaniline	99-09-2		<200	ug/kg					U	08/03/11
3 & 4 Methylphenol, Total	65794-96-9		<200	ug/kg					U	08/03/11
Hexachloroethane	67-72-1		<200	ug/kg					U	08/03/11
2,4,6-Trichlorophenol	88-06-2		<200	ug/kg					U	08/03/11
n-Decane	124-18-5		<200	ug/kg					U	08/03/11
n-Dodecane	112-40-3		<300	ug/kg					U	08/03/11
Benzyl alcohol	100-51-6		<200	ug/kg					U	08/03/11
2-Butoxyethanol	111-76-2		<200	ug/kg					U	08/03/11
Tributyl phosphate	126-73-8		<200	ug/kg					U	08/03/11
2-Naphthylamine	91-59-8		<200	ug/kg					U	08/03/11
Cyclohexanone	108-94-1		<200	ug/kg					U	08/03/11
Pyridine	110-86-1		<200	ug/kg					U	08/03/11
1,2,4-Trimethylbenzene	95-63-6		<200	ug/kg					U	08/03/11
Benzoic Acid	65-85-0		<200	ug/kg					U	08/03/11
LCS			**QC Sample #61643**							
4-Nitrophenol	100-02-7		4600	ug/kg	76	49 - 128				08/03/11
1,4-Dichlorobenzene	106-46-7		3700	ug/kg	91.9	71 - 122				08/03/11
Phenol	108-95-2		5600	ug/kg	93	72 - 123				08/03/11
1,2,4-Trichlorobenzene	120-82-1		5200	ug/kg	86.7	73 - 127				08/03/11
2,4-Dinitrotoluene	121-14-2		5400	ug/kg	90.2	68 - 121				08/03/11
Pyrene	129-00-0		5800	ug/kg	96.9	75 - 137				08/03/11
4-Chloro-3-methylphenol	59-50-7		5300	ug/kg	89	69 - 127				08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
n-Nitroso-di-n-propylamine	621-64-7		5600	ug/kg	94.1	73 - 125				08/03/11
Acenaphthene	83-32-9		5600	ug/kg	93.9	73 - 122				08/03/11
Pentachlorophenol	87-86-5		4100	ug/kg	67.7	42 - 132				08/03/11
2-Chlorophenol	95-57-8		5400	ug/kg	90	71 - 123				08/03/11
2-Butoxyethanol	111-76-2		5600	ug/kg	92.7	50 - 140				08/03/11
Benzyl alcohol	100-51-6		5800	ug/kg	96.6	50 - 140				08/03/11
2-Methylphenol	95-48-7		5700	ug/kg	95.6	50 - 140				08/03/11
Hexachloroethane	67-72-1		5100	ug/kg	85.1	50 - 140				08/03/11
2-Nitrophenol	88-75-5		5400	ug/kg	90.8	50 - 140				08/03/11
2,4-Dimethylphenol	105-67-9		5600	ug/kg	93.5	50 - 140				08/03/11
2,4-Dichlorophenol	120-83-2		5200	ug/kg	87.1	50 - 140				08/03/11
n-Dodecane	112-40-3		6000	ug/kg	99.9	50 - 140				08/03/11
Naphthalene	91-20-3		5500	ug/kg	91.4	50 - 140				08/03/11
2-Nitroaniline	88-74-4		5600	ug/kg	93.8	50 - 140				08/03/11
Dibenzofuran	132-64-9		5600	ug/kg	94	50 - 140				08/03/11
Fluorene	86-73-7		5700	ug/kg	94.4	50 - 140				08/03/11
Tributyl phosphate	126-73-8		5200	ug/kg	87.4	50 - 140				08/03/11
Hexachlorobenzene	118-74-1		5700	ug/kg	94.3	50 - 140				08/03/11
Anthracene	120-12-7		5600	ug/kg	93	50 - 140				08/03/11
Carbazole	86-74-8		5400	ug/kg	70.7	50 - 140				08/03/11
Di-n-butylphthalate	84-74-2		5600	ug/kg	92.7	50 - 140				08/03/11
3,3-Dichlorobenzidine	91-94-1		4200	ug/kg	69.4	50 - 140				08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7		5900	ug/kg	97.9	50 - 140				08/03/11
Di-n-octylphthalate	117-84-0		5600	ug/kg	93.9	50 - 140				08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Benzo(a)pyrene	50-32-8		5400	ug/kg	90.6	50 - 140				08/03/11
Bis(1-Chloro-2-propyl)ether	108-60-1		5600	ug/kg	92.8	50 - 140				08/03/11
4-Chloroaniline	106-47-8		4800	ug/kg	63.1	50 - 140				08/03/11
MS			**QC Sample #61644**							
			Original 112777001							
4-Nitrophenol	100-02-7	<200	22000	ug/kg	79.8	53 - 130				08/03/11
1,4-Dichlorobenzene	106-46-7	<200	17000	ug/kg	91.6	75 - 117				08/03/11
Phenol	108-95-2	<200	22000	ug/kg	81.5	76 - 123				08/03/11
1,2,4-Trichlorobenzene	120-82-1	<200	25000	ug/kg	89.4	76 - 125				08/03/11
2,4-Dinitrotoluene	121-14-2	<200	25000	ug/kg	91.3	73 - 120				08/03/11
Pyrene	129-00-0	<200	21000	ug/kg	75.5	78 - 134			T	08/03/11
4-Chloro-3-methylphenol	59-50-7	<200	24000	ug/kg	85.8	71 - 129				08/03/11
n-Nitroso-di-n-propylamine	621-64-7	<200	23000	ug/kg	84.3	75 - 124				08/03/11
Acenaphthene	83-32-9	<200	26000	ug/kg	94.8	75 - 121				08/03/11
Pentachlorophenol	87-86-5	<200	21000	ug/kg	75.7	39 - 140				08/03/11
2-Chlorophenol	95-57-8	<200	22000	ug/kg	81.1	75 - 123				08/03/11
2-Butoxyethanol	111-76-2	<200	25000	ug/kg	91.6	50 - 140				08/03/11
Benzyl alcohol	100-51-6	<200	24000	ug/kg	86.3	50 - 140				08/03/11
2-Methylphenol	95-48-7	<200	23000	ug/kg	83.1	50 - 140				08/03/11
Hexachloroethane	67-72-1	<200	23000	ug/kg	84.3	50 - 140				08/03/11
2-Nitrophenol	88-75-5	<200	24000	ug/kg	86.7	50 - 140				08/03/11
2,4-Dimethylphenol	105-67-9	<200	25000	ug/kg	91.7	50 - 140				08/03/11
2,4-Dichlorophenol	120-83-2	<200	23000	ug/kg	83.1	50 - 140				08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
n-Dodecane	112-40-3	<300	31000	ug/kg	111.3	50 - 140				08/03/11
Naphthalene	91-20-3	<200	26000	ug/kg	93.4	50 - 140				08/03/11
2-Nitroaniline	88-74-4	<200	25000	ug/kg	91.6	50 - 140				08/03/11
Dibenzofuran	132-64-9	<200	26000	ug/kg	94.1	50 - 140				08/03/11
Fluorene	86-73-7	<200	27000	ug/kg	98.1	50 - 140				08/03/11
Tributyl phosphate	126-73-8	<200	23000	ug/kg	84.6	50 - 140				08/03/11
Hexachlorobenzene	118-74-1	<200	25000	ug/kg	90.2	50 - 140				08/03/11
Anthracene	120-12-7	<200	26000	ug/kg	94	50 - 140				08/03/11
Carbazole	86-74-8	<200	27000	ug/kg	77.8	50 - 140				08/03/11
Di-n-butylphthalate	84-74-2	<200	28000	ug/kg	103.2	50 - 140				08/03/11
3,3-Dichlorobenzidine	91-94-1	<200	24000	ug/kg	86.1	50 - 140				08/03/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	<200	26000	ug/kg	93.8	50 - 140				08/03/11
Di-n-octylphthalate	117-84-0	<200	26000	ug/kg	92.7	50 - 140				08/03/11
Benzo(a)pyrene	50-32-8	<200	25000	ug/kg	91.3	50 - 140				08/03/11
Bis(1-Chloro-2-propyl)ether	108-60-1	<200	24000	ug/kg	86.6	50 - 140				08/03/11
4-Chloroaniline	106-47-8	<400	22000	ug/kg	62.8	50 - 140				08/03/11
MSD			**QC Sample #61645**							
			Original 112777001						**Paired 61644**	
4-Nitrophenol	100-02-7	<200	24000	ug/kg	88.7	53 - 130	10.60	30		08/03/11
1,4-Dichlorobenzene	106-46-7	<200	17000	ug/kg	94.4	75 - 117	3.00	30		08/03/11
Phenol	108-95-2	<200	25000	ug/kg	95.4	76 - 123	15.70	30		08/03/11
1,2,4-Trichlorobenzene	120-82-1	<200	24000	ug/kg	88.3	76 - 125	1.20	30		08/03/11
2,4-Dinitrotoluene	121-14-2	<200	25000	ug/kg	92.5	73 - 120	1.30	30		08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Pyrene	129-00-0	<200	23000	ug/kg	86	78 - 134	13.00	30		08/03/11
4-Chloro-3-methylphenol	59-50-7	<200	25000	ug/kg	94	71 - 129	9.10	30		08/03/11
n-Nitroso-di-n-propylamine	621-64-7	<200	26000	ug/kg	96.9	75 - 124	13.90	30		08/03/11
Acenaphthene	83-32-9	<200	26000	ug/kg	97.8	75 - 121	3.10	30		08/03/11
Pentachlorophenol	87-86-5	<200	23000	ug/kg	87	39 - 140	13.90	30		08/03/11
2-Chlorophenol	95-57-8	<200	25000	ug/kg	93.3	75 - 123	14.00	30		08/03/11
2-Butoxyethanol	111-76-2	<200	25000	ug/kg	94.2	50 - 140	2.80	30		08/03/11
Benzyl alcohol	100-51-6	<200	27000	ug/kg	100.1	50 - 140	14.80	30		08/03/11
2-Methylphenol	95-48-7	<200	27000	ug/kg	99.8	50 - 140	18.30	30		08/03/11
Hexachloroethane	67-72-1	<200	23000	ug/kg	84.6	50 - 140	0.40	30		08/03/11
2-Nitrophenol	88-75-5	<200	25000	ug/kg	92.6	50 - 140	6.60	30		08/03/11
2,4-Dimethylphenol	105-67-9	<200	26000	ug/kg	96.5	50 - 140	5.10	30		08/03/11
2,4-Dichlorophenol	120-83-2	<200	24000	ug/kg	91.7	50 - 140	9.80	30		08/03/11
n-Dodecane	112-40-3	<300	26000	ug/kg	99	50 - 140	11.70	30		08/03/11
Naphthalene	91-20-3	<200	25000	ug/kg	94.3	50 - 140	1.00	30		08/03/11
2-Nitroaniline	88-74-4	<200	27000	ug/kg	99.8	50 - 140	8.60	30		08/03/11
Dibenzofuran	132-64-9	<200	26000	ug/kg	96.4	50 - 140	2.40	30		08/03/11
Fluorene	86-73-7	<200	26000	ug/kg	97.5	50 - 140	0.60	30		08/03/11
Tributyl phosphate	126-73-8	<200	24000	ug/kg	90.5	50 - 140	6.70	30		08/03/11
Hexachlorobenzene	118-74-1	<200	25000	ug/kg	93.6	50 - 140	3.70	30		08/03/11
Anthracene	120-12-7	<200	26000	ug/kg	97	50 - 140	3.10	30		08/03/11
Carbazole	86-74-8	<200	27000	ug/kg	78.7	50 - 140	1.20	30		08/03/11
Di-n-butylphthalate	84-74-2	<200	25000	ug/kg	94.6	50 - 140	8.70	30		08/03/11
3,3-Dichlorobenzidine	91-94-1	<200	22000	ug/kg	83.6	50 - 140	2.90	30		08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Bis-(2-Ethylhexyl)phthalate	117-81-7	<200	26000	ug/kg	96.3	50 - 140	2.60	30		08/03/11
Di-n-octylphthalate	117-84-0	<200	27000	ug/kg	100.9	50 - 140	8.50	30		08/03/11
Benzo(a)pyrene	50-32-8	<200	25000	ug/kg	94.7	50 - 140	3.70	30		08/03/11
Bis(1-Chloro-2-propyl)ether	108-60-1	<200	25000	ug/kg	95.4	50 - 140	9.70	30		08/03/11
4-Chloroaniline	106-47-8	<400	24000	ug/kg	69.7	50 - 140	10.40	30		08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

QC Batch 187052 **Test** SW-846 8270D Semivolatiles
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #112777001**							
2-Fluorophenol	367-12-4				99.5	44 - 135				08/03/11
Phenol-d5	4165-62-2				99.4	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				104	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				97.7	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				88	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				90.5	61 - 142				08/03/11
SAMPLE			**Sample #112777002**							
2-Fluorophenol	367-12-4				98.8	44 - 135				08/03/11
Phenol-d5	4165-62-2				100.7	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				98.4	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				95.5	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				96	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				101.1	61 - 142				08/03/11
SAMPLE			**Sample #112777003**							
2-Fluorophenol	367-12-4				102.6	44 - 135				08/03/11
Phenol-d5	4165-62-2				101.7	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				105.8	53 - 129				08/03/11

Attention Michael Neely
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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
2-Fluorobiphenyl	321-60-8				108.3	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				83.6	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				115.8	61 - 142				08/03/11
SAMPLE			**Sample #112777004**							
2-Fluorophenol	367-12-4				94.4	44 - 135				08/03/11
Phenol-d5	4165-62-2				95	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				96.7	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				99.8	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				73.3	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				90.2	61 - 142				08/03/11
SAMPLE			**Sample #112777005**							
2-Fluorophenol	367-12-4				99.4	44 - 135				08/03/11
Phenol-d5	4165-62-2				100.6	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				100.8	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				105.8	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				79.8	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				103.6	61 - 142				08/03/11
SAMPLE			**Sample #112777006**							
2-Fluorophenol	367-12-4				100.7	44 - 135				08/03/11
Phenol-d5	4165-62-2				102.4	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				101.2	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				101.6	36 - 141				08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
2,4,6-Tribromophenol	118-79-6				85.3	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				106.1	61 - 142				08/03/11
BLANK			**QC Sample #61642**							
2-Fluorophenol	367-12-4				99.6	44 - 135				08/03/11
Phenol-d5	4165-62-2				102.8	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				104.5	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				101.8	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				78.4	17 - 142				08/03/11
Terphenyl-d14	98904-43-9				112.1	61 - 142				08/03/11
LCS			**QC Sample #61643**							
2-Fluorophenol	367-12-4				102.6	19 - 140				08/03/11
Phenol-d5	4165-62-2				104.4	32 - 134				08/03/11
Nitrobenzene-d5	4165-60-0				103.8	60 - 122				08/03/11
2-Fluorobiphenyl	321-60-8				103.1	57 - 122				08/03/11
2,4,6-Tribromophenol	118-79-6				94.3	34 - 139				08/03/11
Terphenyl-d14	98904-43-9				109.7	49 - 147				08/03/11
MS			**QC Sample #61644**							
			Original 112777001							
2-Fluorophenol	367-12-4				93.9	44 - 135				08/03/11
Phenol-d5	4165-62-2				91.4	41 - 136				08/03/11
Nitrobenzene-d5	4165-60-0				106.2	53 - 129				08/03/11
2-Fluorobiphenyl	321-60-8				100	36 - 141				08/03/11
2,4,6-Tribromophenol	118-79-6				98.7	17 - 142				08/03/11

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Terphenyl-d14	98904-43-9				84.7	61 - 142				08/03/11
MSD			**QC Sample #61645**							
			Original 112777001					**Paired 61644**		
2-Fluorophenol	367-12-4				101.3	44 - 135	7.60			08/03/11
Phenol-d5	4165-62-2				103.7	41 - 136	12.60			08/03/11
Nitrobenzene-d5	4165-60-0				102.1	53 - 129	3.90			08/03/11
2-Fluorobiphenyl	321-60-8				104	36 - 141	3.90			08/03/11
2,4,6-Tribromophenol	118-79-6				96.4	17 - 142	2.40			08/03/11
Terphenyl-d14	98904-43-9				95.6	61 - 142	12.10			08/03/11

Date: 26 August 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100K Area AH Waste Site 100-K-77
Subject: PAHs - Sample Data Group (SDG) SL1099

INTRODUCTION

This memorandum presents the results of data validation for SDG SL1099 prepared by TestAmerica. A list of samples validated along with the analytical method is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Method
B2FPM3	7/26/2011	Soil	C	8310
B2FPM4	7/26/2011	Soil	C	8310
B2FPM5	7/26/2011	Soil	C	8310
B2FPM6	7/26/2011	Soil	C	8310
B2FPM7	7/26/2011	Soil	C	8310
B2FPM8	7/25/2011	Soil	C	8310

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 PAHs are extraction within 14 days of sample collection and analysis within 40 days of sample extraction. Sample preservation requires chilling to 4 degrees Celsius.

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

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

Anthracene, fluoranthene and phenanthrene were detected in equipment blank B2FPM8.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the laboratory control sample accuracy limits are 50% to 150% and the matrix spike sample accuracy limits are ones specified by the DV procedure. The surrogate accuracy limits used for data validation were the ones specified by the DV procedure (30% to 150%).

Surrogates

All surrogate recoveries were acceptable.

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

All MS/MSD recoveries were acceptable with the following exceptions. The MS recoveries for benzo(a)anthracene, chrysene, fluoranthene and pyrene were above the upper acceptance limits. Associated detected sample results should be qualified as estimates and flagged "J." Associated non-detected sample results should not be qualified for the MS recovery infractions. See the table in Appendix 2 for a listing of all affected sample results.

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%. When duplicate RPDs exceed the limits and have associated results <5X the reporting limits with differences <2X the reporting limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD RPD values were acceptable with the following exceptions. The RPDs for benzo(a)anthracene, chrysene, fluoranthene and pyrene were above the acceptance limit. Sample results with associated RPD values above the acceptance limits should be qualified as estimates and flagged "J" for detects and "UJ" for non-detects. See the table in Appendix 2 for a listing of all affected sample results.

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

All reported sample MDLs were below the CRDLs with the following exceptions. The acenaphthene, acenaphthylene and naphthalene MDLs for all samples were greater than the CRDLs.

- **Completeness**

SDG SL1099 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of sample results as estimates were due to MS recovery infractions and MS/MSD RPD infractions. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

- **U —** The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ —** The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J —** Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+ —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J- —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N —** The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ —** The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+ —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ- —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR —** Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

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

Appendix 2

Summary of Data Qualification

PAHs Data Qualification Summary			
SDG: SL1099	Reviewer: AQA	Project: 100K Area AH Waste Site 100-K-77	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Benzo(a)anthracene	UJ	B2FPM3, B2FPM5, B2FPM8	Poor MS/MSD precision
Benzo(a)anthracene	J	B2FPM4, B2FPM6, B2FPM7	High MS recovery, poor MS/MSD precision
Chrysene	UJ	B2FPM5, B2FPM8	Poor MS/MSD precision
Chrysene	J	B2FPM3, B2FPM4, B2FPM6, B2FPM7	High MS recovery, poor MS/MSD precision
Fluoranthene	J	B2FPM3, B2FPM4, B2FPM5, B2FPM6, B2FPM7, B2FPM8	High MS recovery, poor MS/MSD precision
Pyrene	UJ	B2FPM5, B2FPM8	Poor MS/MSD precision
Pyrene	J	B2FPM3, B2FPM4, B2FPM6, B2FPM7	High MS recovery, poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM3

HPLC

Lot-Sample #...: F1H020426-001 Work Order #...: MLCD91AC Matrix.....: SOLID
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 7.7 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		ND	54	ug/kg	21
Acenaphthylene		ND	110	ug/kg	29
Anthracene		ND	33	ug/kg	1.0
Benzo(a)anthracene	UJ	ND N	16	ug/kg	2.2
Benzo(b)fluoranthene		**6.7 J,S**	**16**	**ug/kg**	**1.7**
Benzo(k)fluoranthene		**2.7 J,S**	**16**	**ug/kg**	**1.6**
Benzo(ghi)perylene		**9.1 J,S**	**33**	**ug/kg**	**2.1**
Benzo(a)pyrene		**3.4 J,S**	**16**	**ug/kg**	**0.72**
Chrysene	J	**4.1 J,S,N**	**16**	**ug/kg**	**2.6**
Dibenz(a,h)anthracene		ND	33	ug/kg	3.4
Fluoranthene	J	**5.6 J,N**	**33**	**ug/kg**	**4.0**
Fluorene		ND	33	ug/kg	3.1
Indeno(1,2,3-cd)pyrene		**6.9 J,S**	**16**	**ug/kg**	**1.3**
Naphthalene		ND	54	ug/kg	24
Phenanthrene		**5.6 J**	**33**	**ug/kg**	**4.3**
Pyrene	J	**8.3 J,S,N**	**33**	**ug/kg**	**3.0**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	79	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

S Positive analyte detection appears questionable during spectral confirmation.

LS
8-26-2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM4

HPLC

Lot-Sample #...: F1H020426-002 Work Order #...: MLCEC1AC Matrix.....: SOLID
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 5.7 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		57 S	53	ug/kg	20
Acenaphthylene		ND	110	ug/kg	28
Anthracene		6.2 J,S	32	ug/kg	0.98
Benzo(a)anthracene	J	15 J,S,N	16	ug/kg	2.2
Benzo(b)fluoranthene		18	16	ug/kg	1.6
Benzo(k)fluoranthene		6.8 J,S	16	ug/kg	1.6
Benzo(ghi)perylene		15 J,S	32	ug/kg	2.1
Benzo(a)pyrene		16 S	16	ug/kg	0.71
Chrysene	J	18 S,N	16	ug/kg	2.5
Dibenz(a,h)anthracene		ND	32	ug/kg	3.3
Fluoranthene	J	41 N	32	ug/kg	3.9
Fluorene		6.8 J,S	32	ug/kg	3.0
Indeno(1,2,3-cd)pyrene		22 S	16	ug/kg	1.3
Naphthalene		ND	53	ug/kg	23
Phenanthrene		31 J	32	ug/kg	4.2
Pyrene	J	42 N	32	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	80	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

S Positive analyte detection appears questionable during spectral confirmation.

J Estimated result. Result is less than RL.

LS
8-26-2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM5

HPLC

Lot-Sample #...: F1H020426-003 Work Order #...: MLCED1AC Matrix.....: SOLID
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 6.7 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		ND	54	ug/kg	21
Acenaphthylene		ND	110	ug/kg	29
Anthracene		**1.4 J,S**	**32**	**ug/kg**	**0.99**
Benzo(a)anthracene	UJ	ND N	16	ug/kg	2.2
Benzo(b)fluoranthene		**14 J**	**16**	**ug/kg**	**1.7**
Benzo(k)fluoranthene		ND	16	ug/kg	1.6
Benzo(ghi)perylene		**13 J,S**	**32**	**ug/kg**	**2.1**
Benzo(a)pyrene		**12 J,S**	**16**	**ug/kg**	**0.71**
Chrysene	UJ	ND N	16	ug/kg	2.6
Dibenz(a,h)anthracene		ND	32	ug/kg	3.3
Fluoranthene	J	**19 J,N**	**32**	**ug/kg**	**3.9**
Fluorene		ND	32	ug/kg	3.1
Indeno(1,2,3-cd)pyrene		**11 J,S**	**16**	**ug/kg**	**1.3**
Naphthalene		ND	54	ug/kg	23
Phenanthrene		**5.4 J,S**	**32**	**ug/kg**	**4.3**
Pyrene	UJ	ND N	32	ug/kg	2.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	81	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

S Positive analyte detection appears questionable during spectral confirmation.

LS
8-26-2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM6

HPLC

Lot-Sample #...: F1H020426-004 Work Order #...: MLCEE1AC Matrix.....: SOLID
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 5.9 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		ND	53	ug/kg	21
Acenaphthylene		ND	110	ug/kg	28
Anthracene		ND	32	ug/kg	0.98
Benzo(a)anthracene	J	**4.0 J,S,N**	**16**	**ug/kg**	**2.2**
Benzo(b)fluoranthene		**5.9 J,S**	**16**	**ug/kg**	**1.6**
Benzo(k)fluoranthene		**1.9 J,S**	**16**	**ug/kg**	**1.6**
Benzo(ghi)perylene		ND	32	ug/kg	2.1
Benzo(a)pyrene		**4.5 J,S**	**16**	**ug/kg**	**0.71**
Chrysene	J	**6.1 J,S,N**	**16**	**ug/kg**	**2.5**
Dibenz(a,h)anthracene		ND	32	ug/kg	3.3
Fluoranthene	J	**6.0 J,N**	**32**	**ug/kg**	**3.9**
Fluorene		ND	32	ug/kg	3.0
Indeno(1,2,3-cd)pyrene		ND	16	ug/kg	1.3
Naphthalene		ND	53	ug/kg	23
Phenanthrene		ND	32	ug/kg	4.3
Pyrene	J	**7.4 J,S,N**	**32**	**ug/kg**	**2.9**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	69	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

S Positive analyte detection appears questionable during spectral confirmation.

LS
8-26-2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM7

HPLC

Lot-Sample #...: F1H020426-005 Work Order #...: MLCEF1AC Matrix.....: SOLID
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 5.8 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		ND	53	ug/kg	20
Acenaphthylene		ND	110	ug/kg	28
Anthracene		ND	32	ug/kg	0.98
Benzo(a)anthracene	J	**2.6 J,S,N**	**16**	**ug/kg**	**2.2**
Benzo(b)fluoranthene		**5.6 J,S**	**16**	**ug/kg**	**1.6**
Benzo(k)fluoranthene		ND	16	ug/kg	1.6
Benzo(ghi)perylene		**5.0 J,S**	**32**	**ug/kg**	**2.1**
Benzo(a)pyrene		**5.0 J,S**	**16**	**ug/kg**	**0.71**
Chrysene	J	**4.2 J,S,N**	**16**	**ug/kg**	**2.5**
Dibenz(a,h)anthracene		ND	32	ug/kg	3.3
Fluoranthene	J	**9.0 J,N**	**32**	**ug/kg**	**3.9**
Fluorene		ND	32	ug/kg	3.0
Indeno(1,2,3-cd)pyrene		**6.0 J,S**	**16**	**ug/kg**	**1.3**
Naphthalene		ND	53	ug/kg	23
Phenanthrene		**4.5 J,S**	**32**	**ug/kg**	**4.2**
Pyrene	J	**8.6 J,S,N**	**32**	**ug/kg**	**2.9**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	64	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

S Positive analyte detection appears questionable during spectral confirmation.

LS
8-26-2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2FPM8

HPLC

Lot-Sample #...: F1H020426-006 Work Order #...: MLCEG1AC Matrix.....: SOLID
Date Sampled...: 07/25/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/15/11
Prep Batch #...: 1216014
Dilution Factor: 1
% Moisture.....: 0.020 Method.....: SW846 8310

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene		ND	50	ug/kg	19
Acenaphthylene		ND	100	ug/kg	27
Anthracene		**0.96 J,S**	**30**	**ug/kg**	**0.92**
Benzo(a)anthracene	UJ	ND N	15	ug/kg	2.1
Benzo(b)fluoranthene		ND	15	ug/kg	1.6
Benzo(k)fluoranthene		ND	15	ug/kg	1.5
Benzo(ghi)perylene		ND	30	ug/kg	2.0
Benzo(a)pyrene		ND	15	ug/kg	0.67
Chrysene	UJ	ND N	15	ug/kg	2.4
Dibenz(a,h)anthracene		ND	30	ug/kg	3.1
Fluoranthene	J	**4.2 J,N**	**30**	**ug/kg**	**3.7**
Fluorene		ND	30	ug/kg	2.9
Indeno(1,2,3-cd)pyrene		ND	15	ug/kg	1.2
Naphthalene		ND	50	ug/kg	22
Phenanthrene		**11 J**	**30**	**ug/kg**	**4.0**
Pyrene	UJ	ND N	30	ug/kg	2.7

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	80	(49 - 104)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

S Positive analyte detection appears questionable during spectral confirmation.

LS
8-26-2011

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
MS B3-60
Richland, Washington 99352
August 17, 2011
Attention: Mike Neely

TestAmerica Laboratories, Inc.

SDG	: SL1099
Number of Samples	: six samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: August 2, 2011

II. Introduction

On August 2, 2011, six solid samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F11-092

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

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

Deviation from Request: None

IV. Definitions

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

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company
August 17, 2011
SDG: SL1099

TestAmerica Laboratories, Inc.

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

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

PAHs

Batch: 1216014

Several analytes detected in the associated samples were given the "S" qualifier. The "S" was used to designate positive analyte detection on both the primary and confirmation columns that appeared questionable during spectral confirmation. The software used to perform the confirmation of hits reviews an overlay of the sample and the reference library spectra. The software evaluates the differences in the spectra and assigns a "match" value. Values above 700 are considered a confirmation and results are reported. Values under the 700 threshold are flagged with the "S" qualifier.

Affected Samples:
F1H020426 (1): B2FPM3
F1H020426 (2): B2FPM4
F1H020426 (3): B2FPM5
F1H020426 (4): B2FPM6
F1H020426 (5): B2FPM7
F1H020426 (6): B2FPM8

The MS recovery for Benzo(a)anthracene, Chrysene, Fluoranthene and Pyrene are outside the established QC limits. The RPD is not within method acceptance criteria. A matrix interference is physically evident in the sample. These samples were very yellow and cloudy. Method performance is demonstrated by acceptable LCS recovery. No further action is required.

Affected Samples:
F1H020426 (1): B2FPM3
F1H020426 (2): B2FPM4
F1H020426 (3): B2FPM5
F1H020426 (4): B2FPM6
F1H020426 (5): B2FPM7
F1H020426 (6): B2FPM8

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

August 17, 2011
SDG: SL1099

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

Reviewed and approved:

Michael Franks
St. Louis Project Manager

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-143	PAGE 1 OF 1
COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** 8C	**DATA TURNAROUND**
SAMPLING LOCATION 100-K-77 Sample #1	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	15 Days / 15 Days
ICE CHEST NO. GWS-226	**FIELD LOGBOOK NO.** HNF-N-507-23. N/A	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** FEDERAL EXPRESS	**ORIGINAL**
SHIPPED TO TestAmerica St. Louis	**OFFSITE PROPERTY NO.** SEE PTR		**BILL OF LADING/AIR BILL NO.** SEE PTR	~~7590~~ 7950 3145 4282 8-1-11	

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: B2FPL1

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM3	SOIL	JUL 26 2011	0724	✓

7/26/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall	JUL 26 2011 / 0930	SSU #1 MO1109	JUL 26 2011 / 0930
RELINQUISHED BY/REMOVED FROM MO 1109 SSU #1	DATE/TIME 0745 8-1-11	RECEIVED BY/STORED IN FM Hall	DATE/TIME 0745 8-1-11
RELINQUISHED BY/REMOVED FROM FM Hall	DATE/TIME 8-1-11 1430	RECEIVED BY/STORED IN FED EX	DATE/TIME
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN SWilson	DATE/TIME 8.2.11 0940
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 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-144	PAGE 1 OF 1
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-77 Sample #2	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: 6WS-226	FIELD LOGBOOK NO.: HNF-N-507-23. N/A	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR	7950 3145 4282	

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: B2FPL2

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM4	SOIL	JUL 26 2011	0740	✓

7/26/11

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES** — 7/26/11

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 26 2011 / 0930	MO 1109 SSU#1	JUL 26 2011 / 0930
MO1109 SSU#1	7/26/11 0745 / 8-1-11	FM Hall	0745 / 8-1-11
FM Hall	8-1-11 / 1400	FED EX	
FedEx		SWilson	8-2-11 0940

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-145	PAGE 1 OF 1
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-77 Sample #3	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-23. N/A	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR 7950 3145 4282		

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: B2FPL3

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM5	SOIL	JUL 26 2011	0759	✓

7/26/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 26 2011 / 0930	RECEIVED BY/STORED IN: MO1109 SSU #1	DATE/TIME: JUL 26 2011 / 0930
RELINQUISHED BY/REMOVED FROM: MO1109 SSU #1	DATE/TIME: 8-1-11 0745	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 8-1-11 0745
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 8-1-11	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: SWilson	DATE/TIME: 8.2.11 0940
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 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-146	PAGE 1 OF 1
COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** 8C	**DATA TURNAROUND**
SAMPLING LOCATION 100-K-77 Sample #4	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	15 Days / 15 Days
ICE CHEST NO.	**FIELD LOGBOOK NO.** HNF-N-507-23. N/A	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** FEDERAL EXPRESS	**ORIGINAL**
SHIPPED TO TestAmerica St. Louis	**OFFSITE PROPERTY NO.** SEE PTR		**BILL OF LADING/AIR BILL NO.** SEE PTR	7950 3145 4282	

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: B2FPL4

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM6	SOIL	JUL 26 2011 7/26/11	0816	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	7/26/11 JUL 26 2011 0930	SSU#1 MO1109	7/26/11 JUL 26 2011 0930
MO 1109 SSU#1	8-1-11 0745	FM HALL	8-1-11 0745
FM Hall	8-1-11 1400	FED EX	
FEDEX		SWilson	8.2.11 0940

SPECIAL INSTRUCTIONS
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-147	PAGE 1 OF 1
COLLECTOR: F. Hall	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-77 Sample #5	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: 31	FIELD LOGBOOK NO.: HNF-N-507-23. N/A	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR	7950 3145 4282	

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: B2FPL5

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM7	SOIL	7/26/11	0740	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES
RELINQUISHED BY/REMOVED FROM: F. Hall — DATE/TIME: 7/26/11 0930	RECEIVED BY/STORED IN: MO1109 SSU #1 — DATE/TIME: 7/26/11 0930
RELINQUISHED BY/REMOVED FROM: MO 1109 SSU #1 — DATE/TIME: 8-1-11 0745	RECEIVED BY/STORED IN: FM HALL — DATE/TIME: 8-1-11 0745
RELINQUISHED BY/REMOVED FROM: FM HALL — DATE/TIME: 8-1-11 1400	RECEIVED BY/STORED IN: FED Ex — DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FED Ex — DATE/TIME:	RECEIVED BY/STORED IN: SWILSON — DATE/TIME: 8.2.11 - 0940
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 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

SL1099

SDG# SL1099

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-148	PAGE 1 OF 1
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 100-K-77 Sample #6	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-009	FIELD LOGBOOK NO.: HNF-N-507-23. N/A	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR 7950 3145 4282		

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: B2FPL6

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2FPM8	SOIL	JUL 25 2011	0930	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC	DATE/TIME: JUL 25 2011 1130 6-25-11	RECEIVED BY/STORED IN: SSU#1 MO1109	DATE/TIME: JUL 25 2011 1130 6-25-11
RELINQUISHED BY/REMOVED FROM: MO 1109 SSU#1	DATE/TIME: 6-26-11 0930	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 6-26-11 0930
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 6-26-11 0930	RECEIVED BY/STORED IN: MO 1109 SSU#1	DATE/TIME: 6-26-11 0930
RELINQUISHED BY/REMOVED FROM: MO 1109 SSU#	DATE/TIME: 8-1-11 0745	RECEIVED BY/STORED IN: FM Hall	DATE/TIME: 8-1-11 0745
RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: 8-1-11 1400	RECEIVED BY/STORED IN: FED EX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: HOEx	DATE/TIME:	RECEIVED BY/STORED IN: SWilson	DATE/TIME: 8.2-11 0940
RELINQUISHED BY/REMOVED FROM:	DATE/TIME:	RECEIVED BY/STORED IN:	DATE/TIME:

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) PAHs - 8310 {Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene};

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100K Area AH Waste Site 100-K-77			DATA PACKAGE: VSR11-054		
VALIDATOR: Carl Schloesslin		LAB: TestAmerica		DATE: 8-26-2011	
			SDG: SL1099		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	SW-846 8310 X	
SAMPLES/MATRIX Soil samples B2FPM3, B2FPM4, B2FPM5, B2FPM6, B2FPM7, B2FPM8					

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

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

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

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

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

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments:

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

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

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

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

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

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

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

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

Comments:

EB B2FPM8 Hits: anthracene 0.96 ug/kg, fluoranthene 4.2 ug/kg, phenanthrene 11 ug/kg

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

Surrogates analyzed?	(Yes)	No	N/A
Surrogate recoveries acceptable?	(Yes)	No	N/A
Surrogates traceable? (Levels D, E)	Yes	No	(N/A)
Surrogates expired? (Levels D, E)	Yes	No	(N/A)
MS/MSD samples analyzed?	(Yes)	No	N/A
MS/MSD results acceptable?	Yes	(No)	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	(N/A)
LCS/BSS samples analyzed?	(Yes)	No	N/A
LCS/BSS results acceptable?	(Yes)	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(N/A)
Standards expired? (Levels D, E)	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)
Performance audit sample(s) analyzed?	Yes	No	(N/A)
Performance audit sample results acceptable?	Yes	No	(N/A)

Comments:

Benzo(a)anthracene MS %R = 119%
Chrysene MS %R = 123%
Fluoranthene MS %R = 116%
Pyrene MS %R = 238%

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:

Benzo(a)anthracene MS/MSD RPD = 49%
Chrysene MS/MSD RPD = 45%
Fluoranthene MS/MSD RPD = 47%
Pyrene MS/MSD RPD = 92%

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments: None

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

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

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

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

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

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

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

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

Comments:

Acenaphthene MDL = 19 ug/kg (CRDL = 15 ug/kg)
Acenaphthylene MDL = 27 ug/kg (CRDL = 15 ug/kg)
Naphthalene MDL = 22 ug/kg (CRDL = 15 ug/kg)

9. SAMPLE CLEANUP (Levels D and E)

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

Comments:

Appendix 6

Additional Documentation Requested By Client

METHOD BLANK REPORT

HPLC

Client Lot #...: SL1099 **Work Order #...:** MLD2E1AA **Matrix.....:** SOLID
MB Lot-Sample #: F1H040000-014

Prep Date.....: 08/04/11
Analysis Date..: 08/15/11 **Prep Batch #...:** 1216014
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	50	ug/kg	SW846 8310
Acenaphthylene	ND	100	ug/kg	SW846 8310
Anthracene	ND	30	ug/kg	SW846 8310
Benzo(a)anthracene	ND	15	ug/kg	SW846 8310
Benzo(b)fluoranthene	ND	15	ug/kg	SW846 8310
Benzo(k)fluoranthene	ND	15	ug/kg	SW846 8310
Benzo(ghi)perylene	ND	30	ug/kg	SW846 8310
Benzo(a)pyrene	ND	15	ug/kg	SW846 8310
Chrysene	ND	15	ug/kg	SW846 8310
Dibenz(a,h)anthracene	ND	30	ug/kg	SW846 8310
Fluoranthene	ND	30	ug/kg	SW846 8310
Fluorene	ND	30	ug/kg	SW846 8310
Indeno(1,2,3-cd)pyrene	ND	15	ug/kg	SW846 8310
Naphthalene	ND	50	ug/kg	SW846 8310
Phenanthrene	ND	30	ug/kg	SW846 8310
Pyrene	ND	30	ug/kg	SW846 8310

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	81	(49 - 104)

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

HPLC

Client Lot #...: SL1099 Work Order #...: MLD2E1AC Matrix.....: SOLID
LCS Lot-Sample#: F1H040000-014
Prep Date.....: 08/04/11 Analysis Date..: 08/15/11
Prep Batch #...: 1216014
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Acenaphthene	667	490	ug/kg	74	SW846 8310
Acenaphthylene	1330	971	ug/kg	73	SW846 8310
Anthracene	66.7	52.5	ug/kg	79	SW846 8310
Benzo(a)anthracene	66.7	54.3	ug/kg	81	SW846 8310
Benzo(b)fluoranthene	133	108	ug/kg	81	SW846 8310
Benzo(k)fluoranthene	66.7	53.9	ug/kg	81	SW846 8310
Benzo(ghi)perylene	133	111	ug/kg	83	SW846 8310
Benzo(a)pyrene	66.7	49.2	ug/kg	74	SW846 8310
Chrysene	66.7	52.5	ug/kg	79	SW846 8310
Dibenz(a,h)anthracene	133	100	ug/kg	75	SW846 8310
Fluoranthene	133	104	ug/kg	78	SW846 8310
Fluorene	133	102	ug/kg	76	SW846 8310
Indeno(1,2,3-cd)pyrene	66.7	56.8	ug/kg	85	SW846 8310
Naphthalene	667	468	ug/kg	70	SW846 8310
Phenanthrene	66.7	53.7	ug/kg	81	SW846 8310
Pyrene	66.7	57.2	ug/kg	86	SW846 8310

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	79	(65 - 98)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

HPLC

Client Lot #...: SL1099 Work Order #...: MLCD91AE-MS Matrix.....: SOLID
MS Lot-Sample #: F1H020426-001 MLCD91AF-MSD
Date Sampled...: 07/26/11 Date Received..: 08/02/11
Prep Date.....: 08/04/11 Analysis Date..: 08/16/11
Prep Batch #...: 1216014
Dilution Factor: 1 % Moisture.....: 7.7

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acenaphthene	ND	723	523	ug/kg	72		SW846 8310
	ND	725	450	ug/kg	62	15	SW846 8310
Acenaphthylene	ND	1450	1070	ug/kg	74		SW846 8310
	ND	1450	960	ug/kg	66	11	SW846 8310
Anthracene	ND	72.3	64.1	ug/kg	89		SW846 8310
	ND	72.5	52.6	ug/kg	73	20	SW846 8310
Benzo(a)anthracene	ND	72.3	86.2	ug/kg	119		SW846 8310
	Qualifiers: N						
	ND	72.5	52.3	ug/kg	72	49	SW846 8310
Benzo(b)fluoranthene	6.7	145	145	ug/kg	96		SW846 8310
	6.7	145	105	ug/kg	68	32	SW846 8310
Benzo(k)fluoranthene	2.7	72.3	63.0	ug/kg	83		SW846 8310
	2.7	72.5	52.1	ug/kg	68	19	SW846 8310
Benzo(ghi)perylene	9.1	145	132	ug/kg	85		SW846 8310
	9.1	145	117	ug/kg	74	12	SW846 8310
Benzo(a)pyrene	3.4	72.3	56.0	ug/kg	73		SW846 8310
	3.4	72.5	55.0	ug/kg	71	1.8	SW846 8310
Chrysene	4.1	72.3	93.3	ug/kg	123		SW846 8310
	Qualifiers: N						
	4.1	72.5	58.8	ug/kg	75	45	SW846 8310
Dibenz(a,h)anthracene	ND	145	99.5	ug/kg	69		SW846 8310
	ND	145	94.4	ug/kg	65	5.2	SW846 8310
Fluoranthene	5.6	145	173	ug/kg	116		SW846 8310
	Qualifiers: N						
	5.6	145	107	ug/kg	70	47	SW846 8310
Fluorene	ND	145	110	ug/kg	76		SW846 8310
	ND	145	96.3	ug/kg	66	13	SW846 8310
Indeno(1,2,3-cd)pyrene	6.9	72.3	76.0	ug/kg	96		SW846 8310
	6.9	72.5	61.4	ug/kg	75	21	SW846 8310
Naphthalene	ND	723	561	ug/kg	78		SW846 8310
	ND	725	438	ug/kg	60	25	SW846 8310
Phenanthrene	5.6	72.3	73.6	ug/kg	94		SW846 8310
	5.6	72.5	54.9	ug/kg	68	29	SW846 8310
Pyrene	8.3	72.3	180	ug/kg	238		SW846 8310
	Qualifiers: N						
	8.3	72.5	66.5	ug/kg	80	92	SW846 8310

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

HPLC

Client Lot #...: SL1099 Work Order #...: MLCD91AE-MS Matrix.....: SOLID
MS Lot-Sample #: F1H020426-001 MLCD91AF-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
p-Terphenyl	81	(49 - 104)
	71	(49 - 104)

NOTE(S):

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

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

Date: 26 August 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100K Area AH Waste Site 100-K-77
Subject: Inorganics - Sample Data Group (SDG) WSCF112777

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF112777 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
B2FPL7	7/26/2011	Soil	C	6010C & 200.8
B2FPL8	7/26/2011	Soil	C	6010C & 200.8
B2FPL9	7/26/2011	Soil	C	6010C & 200.8
B2FPM0	7/26/2011	Soil	C	6010C & 200.8
B2FPM1	7/26/2011	Soil	C	6010C & 200.8
B2FPM2	7/25/2011	Soil	C	6010C & 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. There are no sample preservation requirements.

The samples were analyzed within the prescribed holding times.

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable with the following exception. The B laboratory blank result was > the method detection limit (MDL) but < the reporting limit (RL). The B results for samples B2FPL7, B2FPL8 and B2FPM1 were detects < the RL and should be qualified as non-detects at the RL (22 mg/kg) and flagged "U." The B results for the remaining samples were non-detects and should not be qualified.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

Mn, Ba, Cu, V and Sr were detected in equipment blank B2FPM2.

- **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 ones specified by the DV procedure. The 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 exceptions.

The MS and MSD recoveries for Sb were < the lower acceptance limit. The Sb results for samples B2FPL7, B2FPL8 and B2FPM1 were detects and should be qualified as estimates and flagged "J-." The Sb results for samples B2FPL9, B2FPM0 and B2FPM2 were non-detects and should be qualified as estimates and flagged "UJ."

The MS recovery for Mn and the MSD recovery for Ba were > the upper acceptance limit. The Mn and Ba results for all samples were detects and should be qualified as estimates and flagged "J+."

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exception. The LCS recovery for Li was < the lower acceptance limit. The Li results for samples B2FPL7, B2FPL8, B2FPL9, B2FPM0

and B2FPM1 were detects and should be qualified as estimates and flagged "J-." The Li result for sample B2FPM2 was a non-detect and should be qualified as an estimate and flagged "UJ."

- **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 exceed the limits and have associated results <5X the reporting limits with differences <2X the reporting limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD RPD values were acceptable with the following exceptions. The Mn, Ba and Sr RPDs were above the upper acceptance limit. The Mn and Ba results for all samples were detects and would be qualified as estimates and flagged "J," but were further flagged "J+" due to MS or MSD recovery infractions. The Sr results for all samples were detects and should be qualified as estimates and flagged "J."

Field Duplicate Samples

All field duplicate results were acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

All reported sample MDLs with associated non-detected sample results were below the CRDLs.

- **Completeness**

SDG WSCF112777 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Multiple minor deficiencies leading to qualification of sample results as estimates occurred. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

- **U —** The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ —** The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J —** Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+ —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J- —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N —** The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ —** The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+ —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ- —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR —** Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

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

Appendix 2

Summary of Data Qualification

Inorganic Data Qualification Summary			
SDG: WSCF112777	Reviewer: AQA	Project: 100K Area AH Waste Site 100-K-77	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
B	22U	B2FPL7, B2FPL8, B2FPM1	Laboratory blank contamination
Li	J-	B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1	Low LCS recovery
Li	UJ	B2FPM2	Low LCS recovery
Mn	J+	B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2	High MS recovery, poor MS/MSD precision
Sb	UJ	B2FPL9, B2FPM0, B2FPM2	Low MS/MSD recoveries
Sb	J-	B2FPL7, B2FPL8, B2FPM1	Low MS/MSD recoveries
Ba	J+	B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2	High MSD recovery, poor MS/MSD precision
Sr	J	B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2	Poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.54	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.90	J-	mg/kg	1	0.43	2.2	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.650	22U	mg/kg	1	0.65	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	342	J+	mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		10.8		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	BN	1.11	J-	mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	59.6	J+	mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.306		mg/kg	1	0.10	0.52	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.277		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		10.3		mg/kg	1	0.52	5.2	07/29/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.10	0.52	07/29/11
Copper	7440-50-8	LA-505-412		18.1		mg/kg	1	0.10	1.0	07/29/11

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

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

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8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412		65.1		mg/kg	1	0.21	2.1	07/29/11
Zinc	7440-66-6	LA-505-412		57.3		mg/kg	1	0.83	5.2	07/29/11
Lead	7439-92-1	LA-505-412		7.20		mg/kg	1	0.10	1.0	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.052		mg/kg	1	0.052	0.21	07/29/11
Molybdenum	7439-98-7	LA-505-412		1.48		mg/kg	1	0.10	1.0	07/29/11
Strontium	7440-24-6	LA-505-412		26.7 J		mg/kg	1	0.10	1.0	07/29/11
Tin	7440-31-5	LA-505-412		1.82		mg/kg	1	0.10	0.52	07/29/11
Uranium	7440-61-1	LA-505-412		0.535		mg/kg	1	0.10	0.52	07/29/11
Arsenic	7440-38-2	LA-505-412	B	2.55		mg/kg	1	0.41	4.1	07/29/11
Selenium	7782-49-2	LA-505-412	B	0.642		mg/kg	1	0.31	3.1	07/29/11

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8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.59	J-	mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.844	22U	mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	367	J+	mg/kg	1	0.098	0.98	07/29/11
Nickel	7440-02-0	LA-505-412		10.6		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.098		mg/kg	1	0.098	0.98	07/29/11
Antimony	7440-36-0	LA-505-412	BN	0.813	J-	mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	N	67.6	J+	mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.220		mg/kg	1	0.098	0.49	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.184		mg/kg	1	0.098	0.98	07/29/11
Chromium	7440-47-3	LA-505-412		8.41		mg/kg	1	0.49	4.9	07/29/11
Cobalt	7440-48-4	LA-505-412		10.8		mg/kg	1	0.098	0.49	07/29/11
Copper	7440-50-8	LA-505-412		17.5		mg/kg	1	0.098	0.98	07/29/11

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

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

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8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412		69.9		mg/kg	1	0.20	2.0	07/29/11
Zinc	7440-66-6	LA-505-412		58.2		mg/kg	1	0.79	4.9	07/29/11
Lead	7439-92-1	LA-505-412		6.07		mg/kg	1	0.098	0.98	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.049		mg/kg	1	0.049	0.20	07/29/11
Molybdenum	7439-98-7	LA-505-412	B	0.859		mg/kg	1	0.098	0.98	07/29/11
Strontium	7440-24-6	LA-505-412		28.2 J		mg/kg	1	0.098	0.98	07/29/11
Tin	7440-31-5	LA-505-412		1.16		mg/kg	1	0.098	0.49	07/29/11
Uranium	7440-61-1	LA-505-412		0.600		mg/kg	1	0.098	0.49	07/29/11
Arsenic	7440-38-2	LA-505-412	B	2.77		mg/kg	1	0.39	3.9	07/29/11
Selenium	7782-49-2	LA-505-412	B	0.927		mg/kg	1	0.29	2.9	07/29/11

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8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.91	J-	mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	247	J+	mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		9.53		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.31	UJ	mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	48.4	J+	mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.156		mg/kg	1	0.10	0.51	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		8.49		mg/kg	1	0.51	5.1	07/29/11
Cobalt	7440-48-4	LA-505-412		7.29		mg/kg	1	0.10	0.51	07/29/11
Copper	7440-50-8	LA-505-412		14.4		mg/kg	1	0.10	1.0	07/29/11

MDL = Minimum Detection
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TP Err = Total Propagated
DF = Dilution Factor
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E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

LS
8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412		46.6		mg/kg	1	0.21	2.1	07/29/11
Zinc	7440-66-6	LA-505-412		35.2		mg/kg	1	0.82	5.1	07/29/11
Lead	7439-92-1	LA-505-412		4.82		mg/kg	1	0.10	1.0	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.051		mg/kg	1	0.051	0.21	07/29/11
Molybdenum	7439-98-7	LA-505-412	B	0.362		mg/kg	1	0.10	1.0	07/29/11
Strontium	7440-24-6	LA-505-412		27.9 J		mg/kg	1	0.10	1.0	07/29/11
Tin	7440-31-5	LA-505-412		2.16		mg/kg	1	0.10	0.51	07/29/11
Uranium	7440-61-1	LA-505-412	B	0.452		mg/kg	1	0.10	0.51	07/29/11
Arsenic	7440-38-2	LA-505-412	B	2.28		mg/kg	1	0.41	4.1	07/29/11
Selenium	7782-49-2	LA-505-412	B	0.391		mg/kg	1	0.31	3.1	07/29/11

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8-26-2011

MDL = Minimum Detection
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TP Err = Total Propagated
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B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)
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U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	BN	0.130		ug/g	1	0.13	0.65	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		12.8	J-	mg/kg	1	0.53	2.6	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.79		mg/kg	1	0.79	27	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	440	J+	mg/kg	1	0.13	1.3	07/29/11
Nickel	7440-02-0	LA-505-412		13.9		mg/kg	1	0.25	2.5	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.13		mg/kg	1	0.13	1.3	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.38	UJ	mg/kg	1	0.38	3.8	07/29/11
Barium	7440-39-3	LA-505-412	N	86.0	J+	mg/kg	1	0.25	2.5	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.346		mg/kg	1	0.13	0.63	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.13		mg/kg	1	0.13	1.3	07/29/11
Chromium	7440-47-3	LA-505-412		17.5		mg/kg	1	0.63	6.3	07/29/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.13	0.63	07/29/11
Copper	7440-50-8	LA-505-412		18.9		mg/kg	1	0.13	1.3	07/29/11

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

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

LS
8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412		63.1		mg/kg	1	0.25	2.5	07/29/11
Zinc	7440-66-6	LA-505-412		53.7		mg/kg	1	1.0	6.3	07/29/11
Lead	7439-92-1	LA-505-412		7.07		mg/kg	1	0.13	1.3	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.063		mg/kg	1	0.063	0.25	07/29/11
Molybdenum	7439-98-7	LA-505-412	B	0.542		mg/kg	1	0.13	1.3	07/29/11
Strontium	7440-24-6	LA-505-412		43.1 J		mg/kg	1	0.13	1.3	07/29/11
Tin	7440-31-5	LA-505-412	B	0.621		mg/kg	1	0.13	0.63	07/29/11
Uranium	7440-61-1	LA-505-412		0.799		mg/kg	1	0.13	0.63	07/29/11
Arsenic	7440-38-2	LA-505-412		11.2		mg/kg	1	0.50	5.0	07/29/11
Selenium	7782-49-2	LA-505-412	B	0.751		mg/kg	1	0.38	3.8	07/29/11

LS
8-26-2011

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

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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 recovery outside control limits.

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.53	J-	mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.743	22U	mg/kg	1	0.64	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	358	J+	mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		10.2		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	BN	0.934	J-	mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	59.7	J+	mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.410		mg/kg	1	0.10	0.52	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.181		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		9.47		mg/kg	1	0.52	5.2	07/29/11
Cobalt	7440-48-4	LA-505-412		10.0		mg/kg	1	0.10	0.52	07/29/11
Copper	7440-50-8	LA-505-412		18.2		mg/kg	1	0.10	1.0	07/29/11

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

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

LS
8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412		65.1		mg/kg	1	0.21	2.1	07/29/11
Zinc	7440-66-6	LA-505-412		56.2		mg/kg	1	0.83	5.2	07/29/11
Lead	7439-92-1	LA-505-412		7.15		mg/kg	1	0.10	1.0	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.052		mg/kg	1	0.052	0.21	07/29/11
Molybdenum	7439-98-7	LA-505-412	B	0.738		mg/kg	1	0.10	1.0	07/29/11
Strontium	7440-24-6	LA-505-412		30.5 J		mg/kg	1	0.10	1.0	07/29/11
Tin	7440-31-5	LA-505-412		1.06		mg/kg	1	0.10	0.52	07/29/11
Uranium	7440-61-1	LA-505-412		0.540		mg/kg	1	0.10	0.52	07/29/11
Arsenic	7440-38-2	LA-505-412	B	3.59		mg/kg	1	0.41	4.1	07/29/11
Selenium	7782-49-2	LA-505-412	B	0.575		mg/kg	1	0.31	3.1	07/29/11

LS
8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.10		ug/g	1	0.10	0.50	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411	U	<0.40 UJ		mg/kg	1	0.40	2.0	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.60		mg/kg	1	0.60	20	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	BN	0.276 J+		mg/kg	1	0.097	0.97	07/29/11
Nickel	7440-02-0	LA-505-412	U	<0.19		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.29 UJ		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	BN	0.245 J+		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	U	<0.097		mg/kg	1	0.097	0.48	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Chromium	7440-47-3	LA-505-412	U	<0.48		mg/kg	1	0.48	4.8	07/29/11
Cobalt	7440-48-4	LA-505-412	U	<0.097		mg/kg	1	0.097	0.48	07/29/11
Copper	7440-50-8	LA-505-412	B	0.141		mg/kg	1	0.097	0.97	07/29/11

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

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

LS
8-26-2011

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Vanadium	7440-62-2	LA-505-412	B	0.217		mg/kg	1	0.19	1.9	07/29/11
Zinc	7440-66-6	LA-505-412	U	<0.78		mg/kg	1	0.78	4.8	07/29/11
Lead	7439-92-1	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Mercury	7439-97-6	LA-505-412	U	<0.048		mg/kg	1	0.048	0.19	07/29/11
Molybdenum	7439-98-7	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Strontium	7440-24-6	LA-505-412	B	0.124 J		mg/kg	1	0.097	0.97	07/29/11
Tin	7440-31-5	LA-505-412	U	<0.097		mg/kg	1	0.097	0.48	07/29/11
Uranium	7440-61-1	LA-505-412	U	<0.097		mg/kg	1	0.097	0.48	07/29/11
Arsenic	7440-38-2	LA-505-412	U	<0.39		mg/kg	1	0.39	3.9	07/29/11
Selenium	7782-49-2	LA-505-412	U	<0.29		mg/kg	1	0.29	2.9	07/29/11

LS
8-26-2011

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

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

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Narrative

Attachment 2
Narrative
WSCF112777

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. 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, U and J) may be applicable to this report, as appropriate

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

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

1

Attachment 2
Narrative
WSCF112777

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):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable 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):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Manganese, and Antimony – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Organic Comments

Semi-VOA – 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):

- Pyrene did not meet the MS and or MSD acceptance limits. Sample results for this analytes were "T" Flagged.
- All other applicable QC controls are within the established limits.

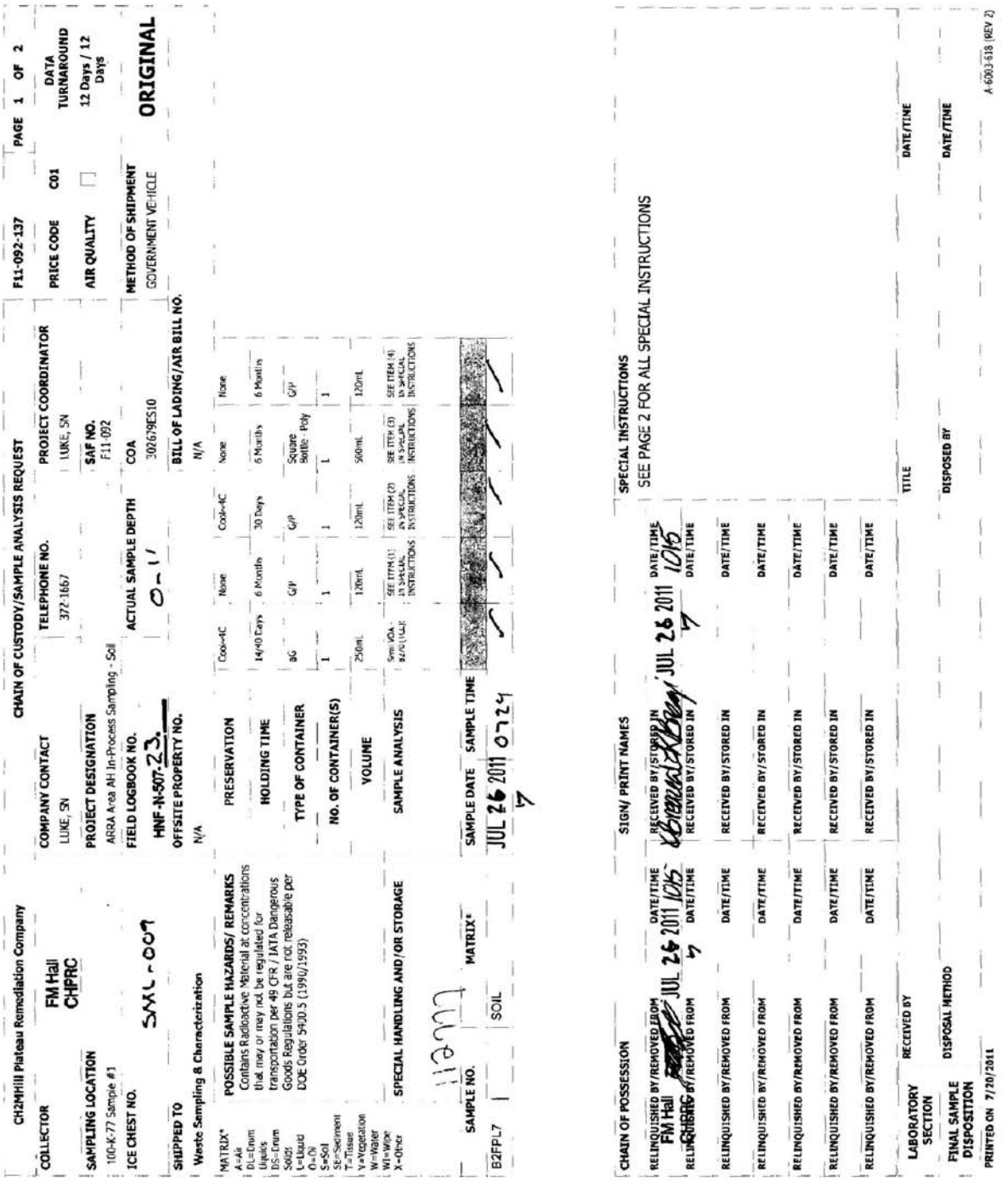
Radiochemistry Comments

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

- Gamma Energy Analysis:
  - Cesium-137 – 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 applicable QC controls are within the established limits.

- Gross Alpha / Gross Beta:
    - All applicable QC controls are within the established limits.

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



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 1 **OF** 2

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01	**DATA TURNAROUND** 12 Days / 12 Days
SAMPLING LOCATION 100-K-77 Sample #1	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	
ICE CHEST NO. SMC-009	**FIELD LOGBOOK NO.** HNF-N-507-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	**ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

112777

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPL7	SOIL	JUL 26 2011	0724	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** JUL 26 2011 1015	**RECEIVED BY/STORED IN** K Brean / K Brean	**DATE/TIME** JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

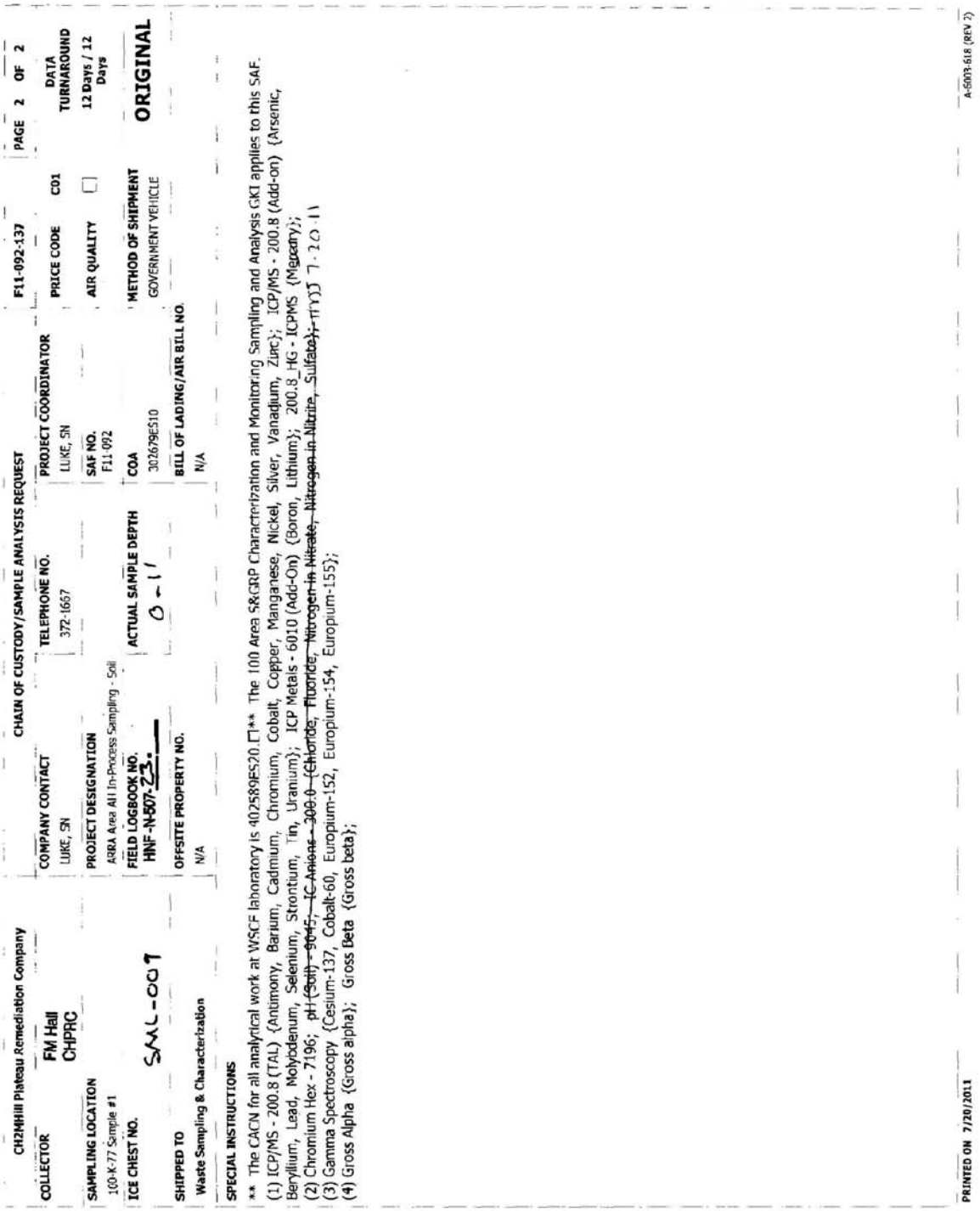
LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #1

PROJECT DESIGNATION: ARRA Area A/I In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SAL-001

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679E510

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKT 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen-in Nitrate, Nitrogen-in Nitrite, Sulfate); TTXT 7-20-11~~
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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A-5003-618 (REV 7)

Friday, July 29, 2011 8:36:30 AM

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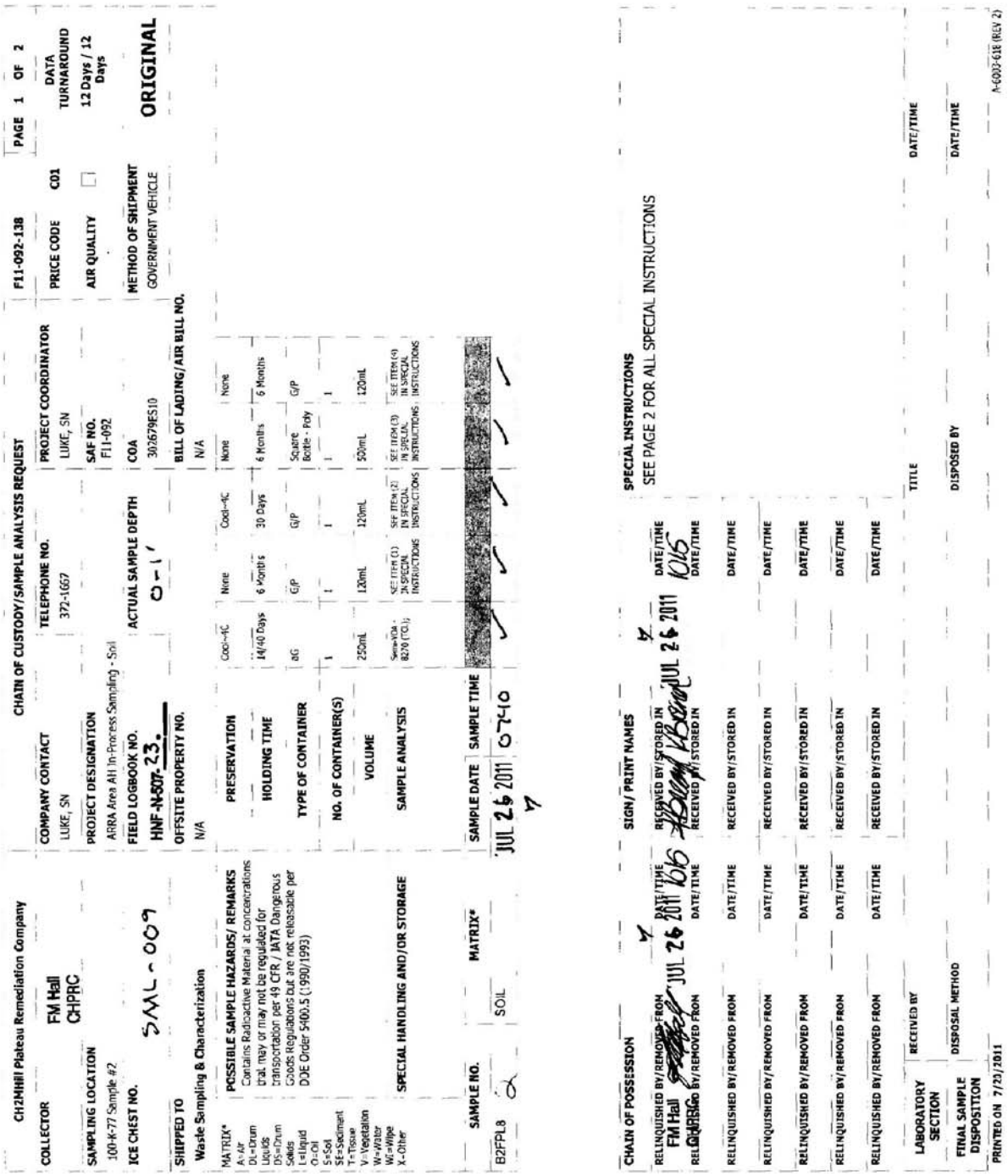

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-138

PAGE 1 **OF** 2

COLLECTOR FM Hall CHPRC

COMPANY CONTACT LUKE, SN

TELEPHONE NO. 372-1667

PROJECT COORDINATOR LUKE, SN

PRICE CODE C01

DATA TURNAROUND 12 Days / 12 Days

SAMPLING LOCATION 100-K-77 Sample #2

PROJECT DESIGNATION ARRA Area AH In-Process Sampling - Soil

SAF NO. F11-092

AIR QUALITY ☐

ICE CHEST NO. SML-009

FIELD LOGBOOK NO. HNF-N-507-23.

ACTUAL SAMPLE DEPTH 0-1'

COA 302679ES10

METHOD OF SHIPMENT GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO Waste Sampling & Characterization

OFFSITE PROPERTY NO. N/A

BILL OF LADING/AIR BILL NO. N/A

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPL8 2	SOIL	JUL 26 2011 7	0740	✓	✓	✓	✓	✓

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

RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** 7 JUL 26 2011 1016	**RECEIVED BY/STORED IN**	**DATE/TIME** 7 JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

PRINTED ON 7/23/2011

A-6003-618 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-138	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #2	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL-009	FIELD LOGBOOK NO.: HNF-N-507-23.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ TMD 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-139 — PAGE 1 OF 2

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01 / **DATA TURNAROUND** 12 Days / 12 Days
SAMPLING LOCATION 100-K-77 Sample #3	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
ICE CHEST NO. SML-007	**FIELD LOGBOOK NO.** HNF-N-507-23	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE — **ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2FPL9 3	SOIL	JUL 26 2011	0759	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC [signature]	DATE/TIME JUL 26 2011 1015	RECEIVED BY/STORED IN [signature]	DATE/TIME JUL 26 2011 1015
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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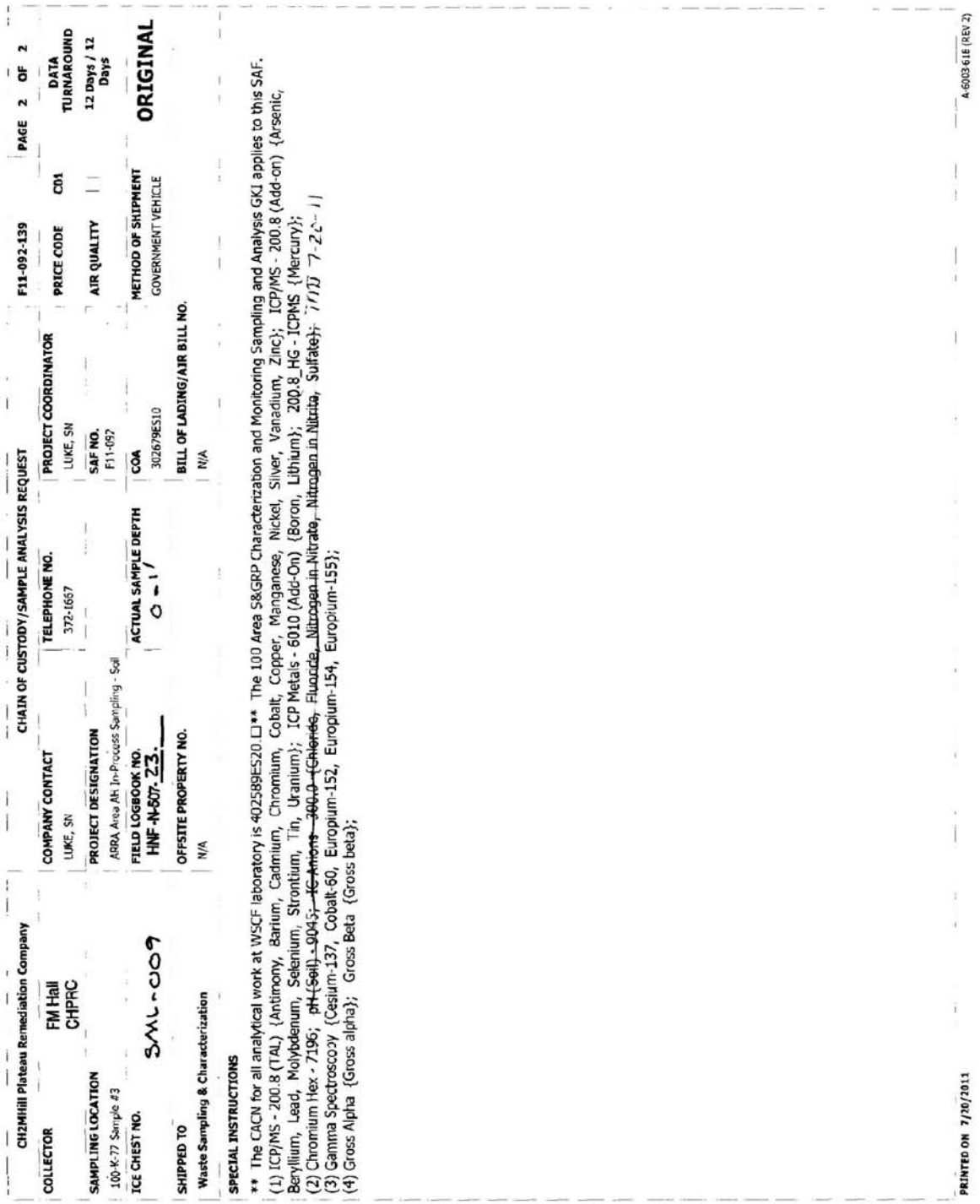
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SML-009

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKJ 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 - (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)~~; 7/13 7-26-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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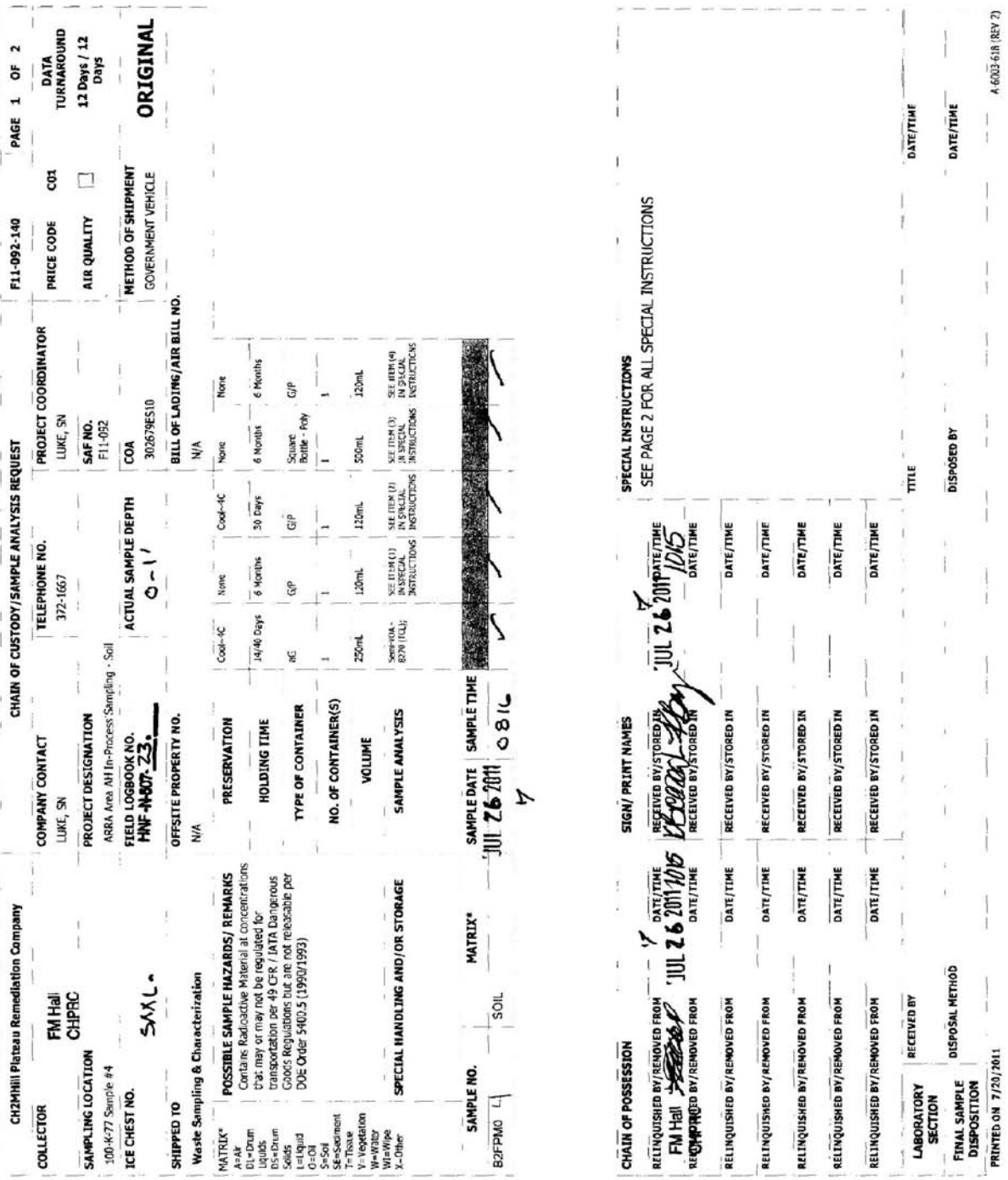


CH2MHill Plateau Remediation Company **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** F11-092-140 PAGE 1 OF 2

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01	**DATA TURNAROUND**
SAMPLING LOCATION 100-K-77 Sample #4	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	12 Days / 12 Days
ICE CHEST NO. SAXL.	**FIELD LOGBOOK NO.** HNF-N-807-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	**ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2FPM04	SOIL	JUL 26 2011 7	0816	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** JUL 26 2011 7 1015	**RECEIVED BY/STORED IN**	**DATE/TIME** JUL 26 2011 7 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

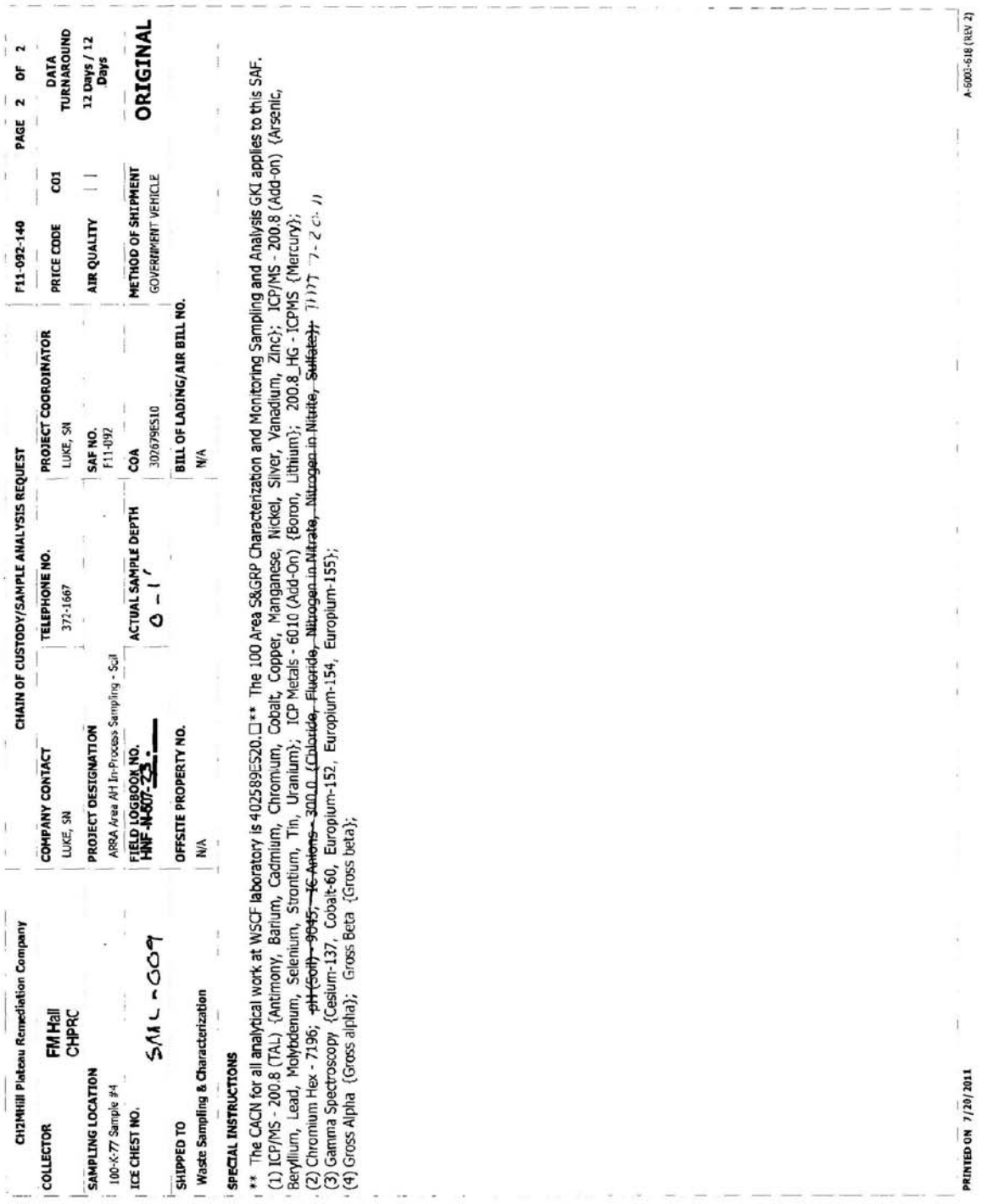
SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

PRINTED ON 7/20/2011 A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-140 PAGE 2 OF 2

COLLECTOR: FM Hall, CHPRC
COMPANY CONTACT: LUKE, SN
TELEPHONE NO.: 372-1667
PROJECT COORDINATOR: LUKE, SN
PRICE CODE: C01
DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #4
PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil
SAF NO.: F11-092
AIR QUALITY:

ICE CHEST NO.: SAL-1509
FIELD LOGBOOK NO.: HNF-N-607-23
ACTUAL SAMPLE DEPTH: 0 - 1'
COA: 302679ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE
ORIGINAL

SHIPPED TO: Waste Sampling & Characterization
OFFSITE PROPERTY NO.: N/A
BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_Hg - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7199 7-2 ch 11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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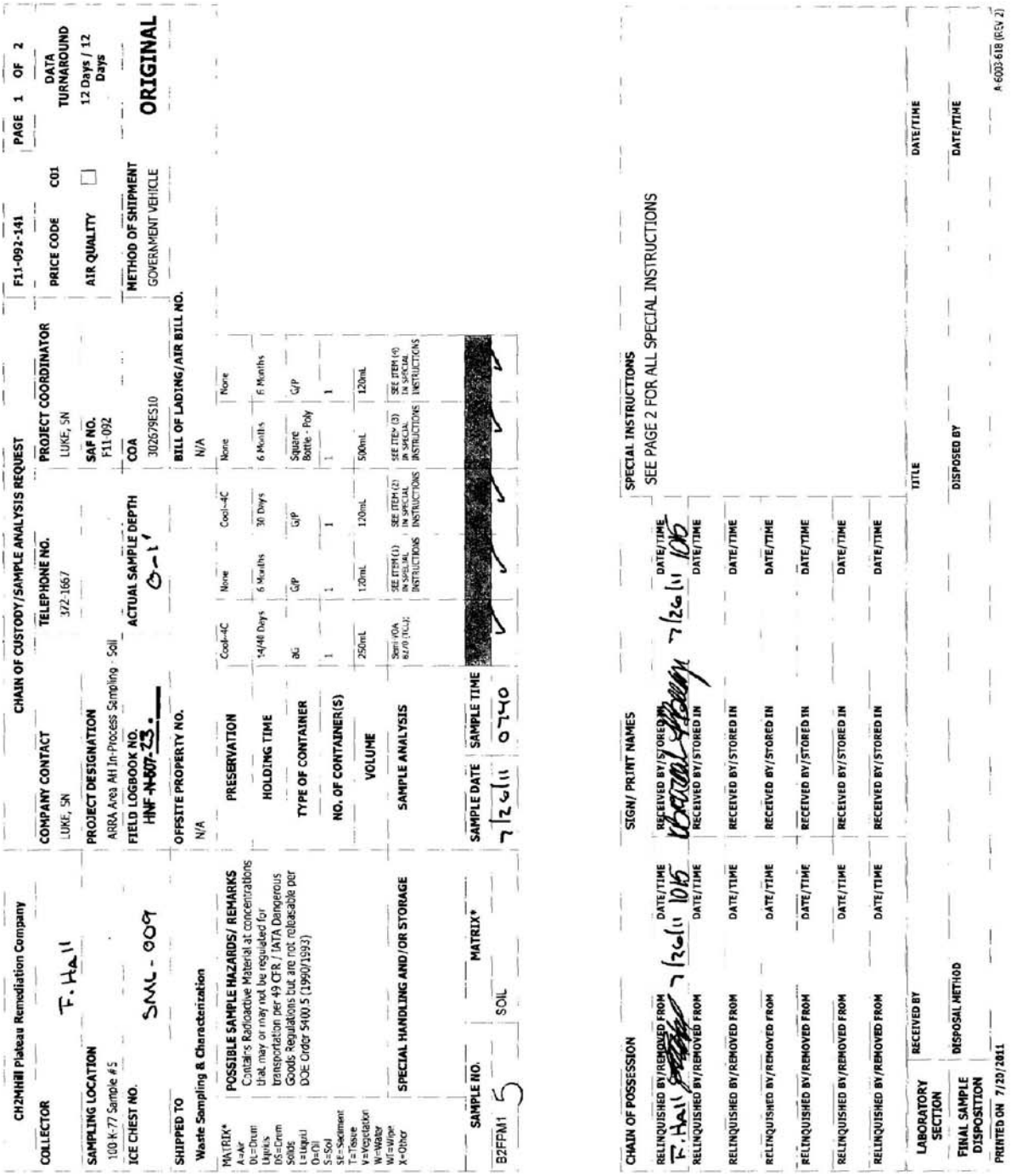

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 1 OF 2

COLLECTOR F. Hall	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01	**DATA TURNAROUND**
SAMPLING LOCATION 100-K-77 Sample #5	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐	12 Days / 12 Days
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-~~N-507~~-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	**ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPM1 5	SOIL	7/26/11	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM F. Hall	**DATE/TIME** 7/26/11 1015	**RECEIVED BY/STORED IN**	**DATE/TIME** 7/26/11 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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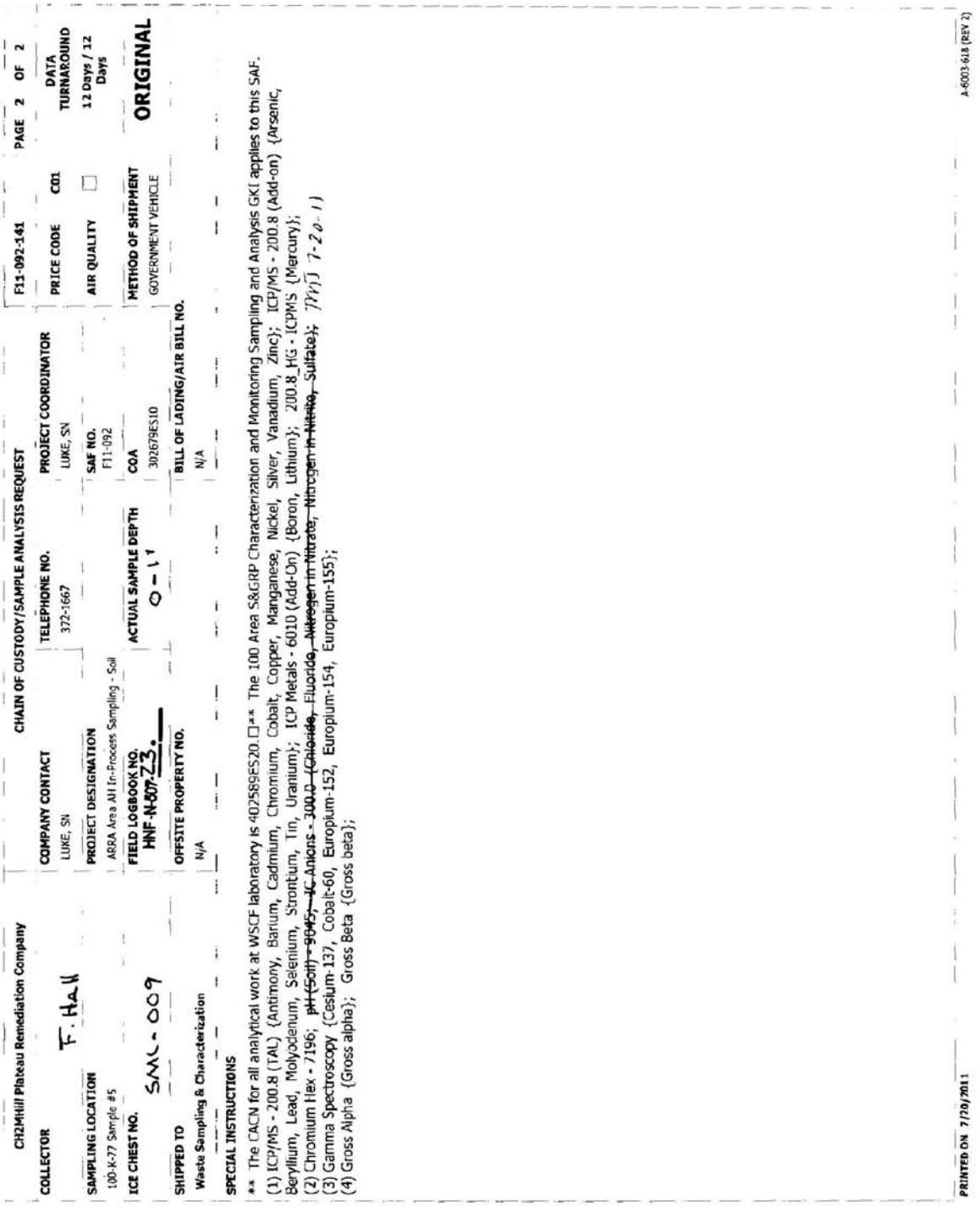
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 2 OF 2

COLLECTOR: F. Hall

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #5

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SMC-009

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20. ☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7196 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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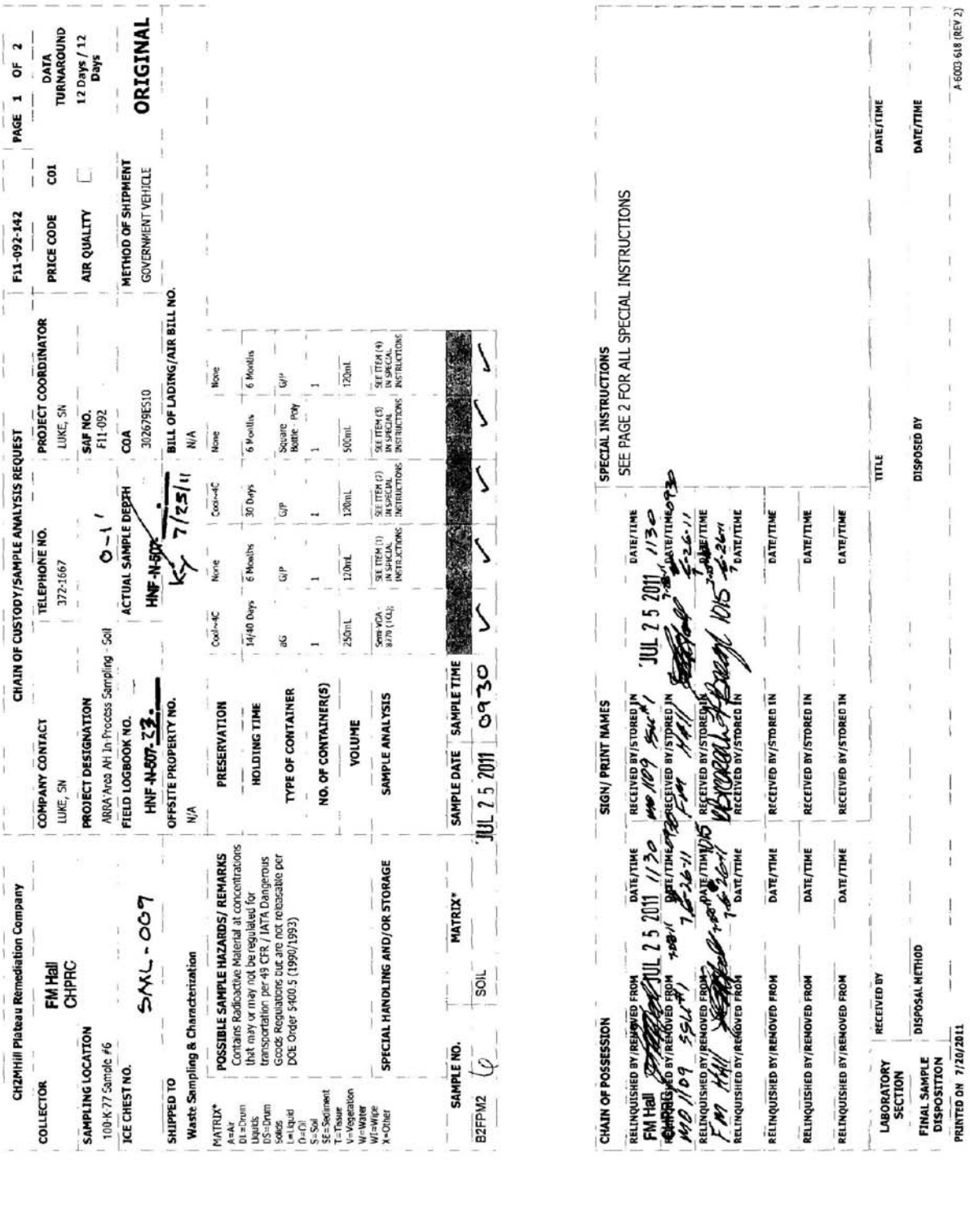
Sample Receipt

Chain of Custody



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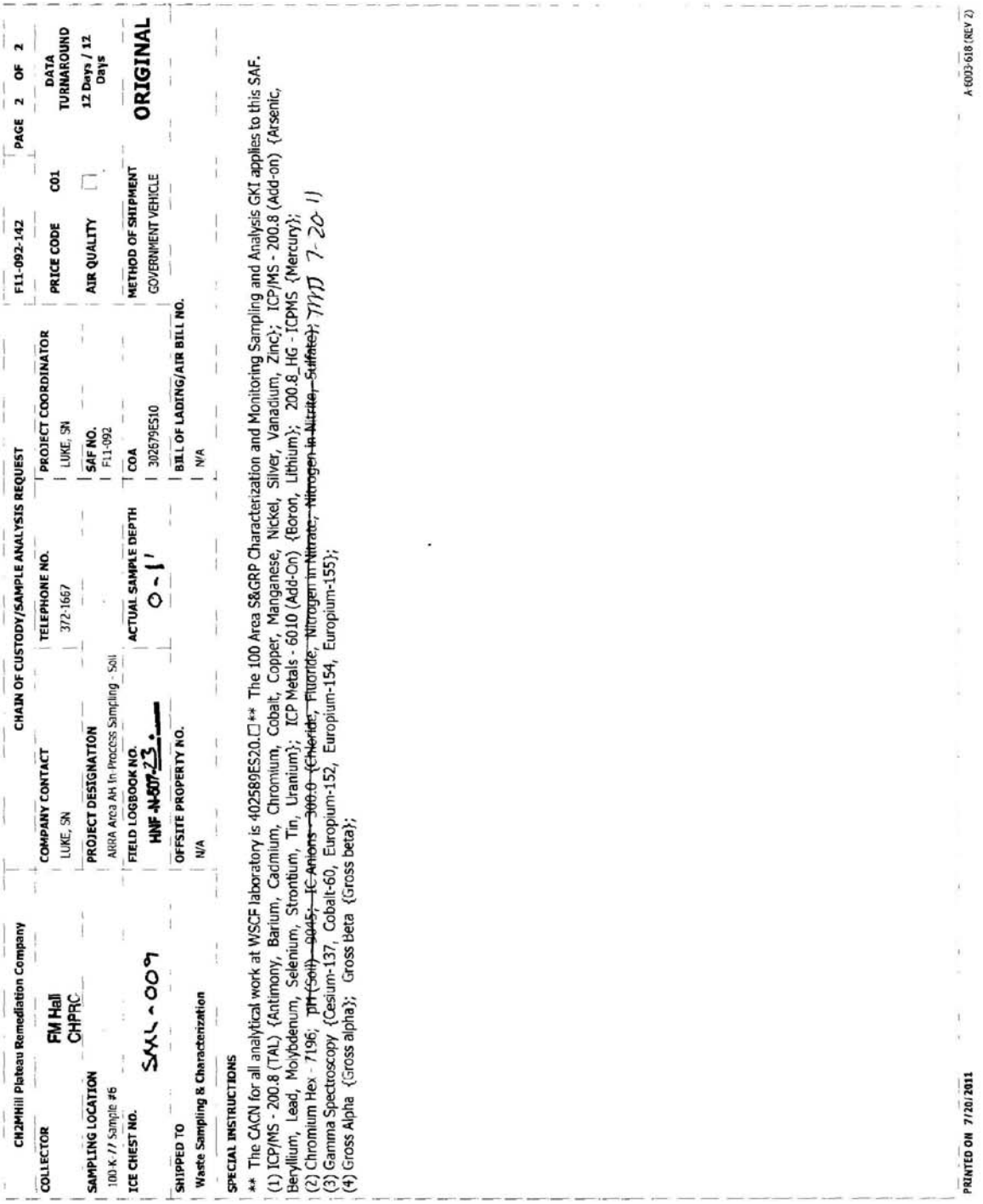
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-142

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100 K // Sample #6

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

ICE CHEST NO.: SAL-0009

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 3026795510

BILL OF LADING/AIR BILL NO.: N/A

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};~~ TTP 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100K Area AH Waste Site 100-K-77			DATA PACKAGE: VSR11-054		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 8-26-2011	
			SDG: WSCF112777		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg		EPA 200.8 X	
SAMPLES/MATRIX Soil samples B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2					

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:

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:

MB Hit: Boron 0.9 mg/kg

EB B2FPM2 Hits: Mn 0.28 mg/kg, Ba 0.25 mg/kg, Cu 0.14 mg/kg, V 0.22 mg/kg, Sr 0.12 mg/kg

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:

Li LCS %R = 67%
Mn MS %R = 151%
Sb MS %R = 65%, MSD %R = 60%
Ba MSD %R = 142%

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:

Mn MS/MSD RPD = 59%
Ba MS/MSD RPD = 41%
Sr MS/MSD RPD = 31%

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:

7. HOLDING TIMES (all levels)

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

Comments: None

8. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: None

Appendix 6

Additional Documentation Requested By Client

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

QC Batch 186870 **Test** ICP-6010 - All possible metals
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61503**							
Lithium	7439-93-2		<4.0	ug/L					U	08/05/11
Boron	7440-42-8		9.00	ug/L					B	08/05/11
LCS			**QC Sample #61504**							
Lithium	7439-93-2		70.3	mg/kg	66.7	20 - 180				08/05/11
Boron	7440-42-8		84.9	mg/kg	90.5	40 - 160				08/05/11
MS			**QC Sample #61505**							
			Original 112777001							
Lithium	7439-93-2	7.90	109	mg/kg	108.7	75 - 125				08/05/11
Boron	7440-42-8	0.650	192	mg/kg	96	75 - 125				08/05/11
MSD			**QC Sample #61506**							
			Original 112777001					**Paired 61505**		
Lithium	7439-93-2	7.90	106	mg/kg	105.7	75 - 125	2.80	30		08/05/11
Boron	7440-42-8	0.650	192	mg/kg	96	75 - 125	0.00	30		08/05/11

Attention Michael Neely
Department Inorganic

Group # WSCF112777

QC Batch 187074 **Test** ICP-2008 MS All possible metal
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #61704**							
Manganese	7439-96-5		279	mg/kg	97.6	75 - 121				07/29/11
Nickel	7440-02-0		57.6	mg/kg	97.5	74 - 122				07/29/11
Silver	7440-22-4		35.0	mg/kg	101.9	83 - 127				07/29/11
Antimony	7440-36-0		179	mg/kg	146.7	62 - 205				07/29/11
Beryllium	7440-41-7		60.7	mg/kg	97.2	77 - 120				07/29/11
Cadmium	7440-43-9		60.8	mg/kg	98.4	76 - 129				07/29/11
Chromium	7440-47-3		70.4	mg/kg	98.7	68 - 119				07/29/11
Cobalt	7440-48-4		102	mg/kg	99.2	77 - 122				07/29/11
Copper	7440-50-8		77.2	mg/kg	95.1	67 - 120				07/29/11
Vanadium	7440-62-2		59.4	mg/kg	100.4	67 - 122				07/29/11
Zinc	7440-66-6		135	mg/kg	95.9	73 - 131				07/29/11
Lead	7439-92-1		93.7	mg/kg	101.4	79 - 124				07/29/11
Mercury	7439-97-6		3.87	mg/kg	102.6	69 - 124				07/29/11
Molybdenum	7439-98-7		46.6	mg/kg	109.5	80 - 125				07/29/11
Strontium	7440-24-6		74.2	mg/kg	102.4	78 - 119				07/29/11
Tin	7440-31-5		111	mg/kg	104.2	84 - 130				07/29/11
Uranium	7440-61-1		359	mg/kg	89.8	86 - 113				07/29/11
Arsenic	7440-38-2		95.3	mg/kg	102.9	79 - 125				07/29/11
Selenium	7782-49-2		95.6	mg/kg	106.8	82 - 133				07/29/11

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
MS			**QC Sample #61770**								
			Original 112772002								
Manganese	7439-96-5		148	mg/kg	150.7	70 - 130				N	07/29/11
Nickel	7440-02-0		79.2	mg/kg	80.9	70 - 130					07/29/11
Silver	7440-22-4		78.9	mg/kg	80.6	70 - 130					07/29/11
Antimony	7440-36-0		63.9	mg/kg	65.3	70 - 130				N	07/29/11
Beryllium	7440-41-7		78.5	mg/kg	80.3	70 - 130					07/29/11
Cadmium	7440-43-9		79.7	mg/kg	81.4	70 - 130					07/29/11
Chromium	7440-47-3		78.8	mg/kg	80.6	70 - 130					07/29/11
Cobalt	7440-48-4		78.0	mg/kg	79.7	70 - 130					07/29/11
Copper	7440-50-8		76.8	mg/kg	78.4	70 - 130					07/29/11
Vanadium	7440-62-2		75.9	mg/kg	77.6	70 - 130					07/29/11
Zinc	7440-66-6		72.3	mg/kg	73.9	70 - 130					07/29/11
Lead	7439-92-1		81.2	mg/kg	83	70 - 130					07/29/11
Mercury	7439-97-6		1.47	mg/kg	75	70 - 130					07/29/11
Molybdenum	7439-98-7		72.1	mg/kg	73.7	70 - 130					07/29/11
Strontium	7440-24-6		88.2	mg/kg	90.1	70 - 130					07/29/11
Tin	7440-31-5		73.0	mg/kg	74.6	70 - 130					07/29/11
Uranium	7440-61-1		75.6	mg/kg	77.2	70 - 130					07/29/11
Arsenic	7440-38-2		81.4	mg/kg	83.2	70 - 130					07/29/11
Selenium	7782-49-2		81.0	mg/kg	82.8	70 - 130					07/29/11
MSD			**QC Sample #61771**								
			Original 112772002						**Paired**	**61770**	
Manganese	7439-96-5		80.8	mg/kg	82.1	70 - 130	58.90	30	*	X	07/29/11
Nickel	7440-02-0		83.2	mg/kg	84.6	70 - 130	4.50	30			07/29/11

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Silver	7440-22-4		78.7	mg/kg	79.9	70 - 130	0.90	30			07/29/11
Antimony	7440-36-0		59.3	mg/kg	60.2	70 - 130	8.10	30		N	07/29/11
Beryllium	7440-41-7		81.6	mg/kg	82.8	70 - 130	3.10	30			07/29/11
Cadmium	7440-43-9		79.0	mg/kg	80.2	70 - 130	1.50	30			07/29/11
Chromium	7440-47-3		83.2	mg/kg	84.5	70 - 130	4.70	30			07/29/11
Cobalt	7440-48-4		84.5	mg/kg	85.9	70 - 130	7.50	30			07/29/11
Copper	7440-50-8		77.6	mg/kg	78.8	70 - 130	0.50	30			07/29/11
Vanadium	7440-62-2		81.8	mg/kg	83.1	70 - 130	6.80	30			07/29/11
Zinc	7440-66-6		91.6	mg/kg	93	70 - 130	22.90	30			07/29/11
Lead	7439-92-1		81.5	mg/kg	82.8	70 - 130	0.20	30			07/29/11
Mercury	7439-97-6		1.43	mg/kg	72.5	70 - 130	3.40	30			07/29/11
Molybdenum	7439-98-7		70.9	mg/kg	72	70 - 130	2.30	30			07/29/11
Strontium	7440-24-6		122	mg/kg	123.6	70 - 130	31.40	30	*	X	07/29/11
Tin	7440-31-5		70.4	mg/kg	71.5	70 - 130	4.20	30			07/29/11
Uranium	7440-61-1		76.3	mg/kg	77.5	70 - 130	0.40	30			07/29/11
Arsenic	7440-38-2		81.0	mg/kg	82.2	70 - 130	1.20	30			07/29/11
Selenium	7782-49-2		80.2	mg/kg	81.5	70 - 130	1.60	30			07/29/11

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

QC Batch 187074 **Test** ICP-2008 MS All possible metal
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61703**						
Manganese	7439-96-5		<0.10	ug/L				U	07/29/11
Nickel	7440-02-0		<0.20	ug/L				U	07/29/11
Silver	7440-22-4		<0.050	ug/L				U	07/29/11
Antimony	7440-36-0		<0.050	ug/L				U	07/29/11
Barium	7440-39-3		<0.20	ug/L				U	07/29/11
Beryllium	7440-41-7		<0.050	ug/L				U	07/29/11
Cadmium	7440-43-9		<0.050	ug/L				U	07/29/11
Chromium	7440-47-3		<0.10	ug/L				U	07/29/11
Cobalt	7440-48-4		<0.10	ug/L				U	07/29/11
Copper	7440-50-8		<0.10	ug/L				U	07/29/11
Vanadium	7440-62-2		<0.20	ug/L				U	07/29/11
Zinc	7440-66-6		<0.80	ug/L				U	07/29/11
Lead	7439-92-1		<0.10	ug/L				U	07/29/11
Mercury	7439-97-6		<0.030	ug/L				U	07/29/11
Molybdenum	7439-98-7		<0.10	ug/L				U	07/29/11
Strontium	7440-24-6		<0.10	ug/L				U	07/29/11
Tin	7440-31-5		<0.10	ug/L				U	07/29/11
Uranium	7440-61-1		<0.10	ug/L				U	07/29/11
Arsenic	7440-38-2		<0.40	ug/L				U	07/29/11

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Selenium	7782-49-2		<0.30	ug/L						U	07/29/11
LCS			**QC Sample #61704**								
Barium	7440-39-3		171	mg/kg	101	78 - 118					07/29/11
MS			**QC Sample #61770**								
			Original 112772002								
Barium	7440-39-3		91.5	mg/kg	93.5	70 - 130					07/29/11
MSD			**QC Sample #61771**								
			Original 112772002						**Paired**	**61770**	
Barium	7440-39-3		140	mg/kg	142.3	70 - 130	41.40	30	*	NX	07/29/11

Date: 26 August 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100K Area AH Waste Site 100-K-77
Subject: General Chemistry - Sample Data Group (SDG) WSCF112777

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF112777 prepared by WSCF Analytical Laboratories. A list of samples validated along with the analytical method is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B2FPL7	7/26/2011	Soil	C	7196A (Cr VI)
B2FPL8	7/26/2011	Soil	C	7196A (Cr VI)
B2FPL9	7/26/2011	Soil	C	7196A (Cr VI)
B2FPM0	7/26/2011	Soil	C	7196A (Cr VI)
B2FPM1	7/26/2011	Soil	C	7196A (Cr VI)
B2FPM2	7/25/2011	Soil	C	7196A (Cr VI)

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 hexavalent chromium is analysis within 30 days of sample collection. Sample preservation requires chilling to 4 degrees Celsius.

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

The laboratory blank result was acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

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 ones specified by the DV procedure. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Matrix Spike Samples (MSs)

The MS recovery was acceptable.

Laboratory Control Samples (LCSs)

The LCS recovery was acceptable.

- **Precision**

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

Laboratory Duplicate Samples

The laboratory duplicate result was acceptable.

Field Duplicate Samples

The field duplicate result was acceptable.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

All reported sample MDLs were below the CRDL.

- **Completeness**

SDG WSCF112777 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

- **U —** The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ —** The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J —** Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+ —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J- —** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N —** The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ —** The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+ —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ- —** The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR —** Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

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

Appendix 2

Summary of Data Qualification

General Chemistry Data Qualification Summary			
SDG: WSCF112777	Reviewer: AQA	Project: 100K Area AH Waste Site 100-K-77	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Cr(VI)	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.54	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.90		mg/kg	1	0.43	2.2	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.650		mg/kg	1	0.65	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	342		mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		10.8		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	BN	1.11		mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	59.6		mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.306		mg/kg	1	0.10	0.52	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.277		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		10.3		mg/kg	1	0.52	5.2	07/29/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.10	0.52	07/29/11
Copper	7440-50-8	LA-505-412		18.1		mg/kg	1	0.10	1.0	07/29/11

LS
8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.59		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.844		mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	367		mg/kg	1	0.098	0.98	07/29/11
Nickel	7440-02-0	LA-505-412		10.6		mg/kg	1	0.20	2.0	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.098		mg/kg	1	0.098	0.98	07/29/11
Antimony	7440-36-0	LA-505-412	BN	0.813		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	N	67.6		mg/kg	1	0.20	2.0	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.220		mg/kg	1	0.098	0.49	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.184		mg/kg	1	0.098	0.98	07/29/11
Chromium	7440-47-3	LA-505-412		8.41		mg/kg	1	0.49	4.9	07/29/11
Cobalt	7440-48-4	LA-505-412		10.8		mg/kg	1	0.098	0.49	07/29/11
Copper	7440-50-8	LA-505-412		17.5		mg/kg	1	0.098	0.98	07/29/11

LS
8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.11		ug/g	1	0.11	0.53	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.91		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.63		mg/kg	1	0.63	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	247		mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		9.53		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.31		mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	48.4		mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.156	LS 8-26-2011	mg/kg	1	0.10	0.51	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		8.49		mg/kg	1	0.51	5.1	07/29/11
Cobalt	7440-48-4	LA-505-412		7.29		mg/kg	1	0.10	0.51	07/29/11
Copper	7440-50-8	LA-505-412		14.4		mg/kg	1	0.10	1.0	07/29/11

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	BN	0.130		ug/g	1	0.13	0.65	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		12.8		mg/kg	1	0.53	2.6	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.79		mg/kg	1	0.79	27	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	440		mg/kg	1	0.13	1.3	07/29/11
Nickel	7440-02-0	LA-505-412		13.9		mg/kg	1	0.25	2.5	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.13		mg/kg	1	0.13	1.3	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.38		mg/kg	1	0.38	3.8	07/29/11
Barium	7440-39-3	LA-505-412	N	86.0		mg/kg	1	0.25	2.5	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.346		mg/kg	1	0.13	0.63	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.13		mg/kg	1	0.13	1.3	07/29/11
Chromium	7440-47-3	LA-505-412		17.5		mg/kg	1	0.63	6.3	07/29/11
Cobalt	7440-48-4	LA-505-412		10.2		mg/kg	1	0.13	0.63	07/29/11
Copper	7440-50-8	LA-505-412		18.9		mg/kg	1	0.13	1.3	07/29/11

LS
8-26-2011

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.10		ug/g	1	0.10	0.52	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411		7.53		mg/kg	1	0.42	2.1	08/05/11
Boron	7440-42-8	LA-505-411	BC	0.743		mg/kg	1	0.64	22	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	N	358		mg/kg	1	0.10	1.0	07/29/11
Nickel	7440-02-0	LA-505-412		10.2		mg/kg	1	0.21	2.1	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.10		mg/kg	1	0.10	1.0	07/29/11
Antimony	7440-36-0	LA-505-412	BN	0.934		mg/kg	1	0.31	3.1	07/29/11
Barium	7440-39-3	LA-505-412	N	59.7		mg/kg	1	0.21	2.1	07/29/11
Beryllium	7440-41-7	LA-505-412	B	0.410	LS 8-26-2011	mg/kg	1	0.10	0.52	07/29/11
Cadmium	7440-43-9	LA-505-412	B	0.181		mg/kg	1	0.10	1.0	07/29/11
Chromium	7440-47-3	LA-505-412		9.47		mg/kg	1	0.52	5.2	07/29/11
Cobalt	7440-48-4	LA-505-412		10.0		mg/kg	1	0.10	0.52	07/29/11
Copper	7440-50-8	LA-505-412		18.2		mg/kg	1	0.10	1.0	07/29/11

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

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI) Prep										**07/27/11**
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	UN	<0.10		ug/g	1	0.10	0.50	07/28/11
ICP Prep										**07/27/11**
ICP-AES										
Lithium	7439-93-2	LA-505-411	U	<0.40		mg/kg	1	0.40	2.0	08/05/11
Boron	7440-42-8	LA-505-411	U	<0.60		mg/kg	1	0.60	20	08/05/11
ICPMS Prep										**07/28/11**
ICP-MS										
Manganese	7439-96-5	LA-505-412	BN	0.276		mg/kg	1	0.097	0.97	07/29/11
Nickel	7440-02-0	LA-505-412	U	<0.19		mg/kg	1	0.19	1.9	07/29/11
Silver	7440-22-4	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Antimony	7440-36-0	LA-505-412	UN	<0.29		mg/kg	1	0.29	2.9	07/29/11
Barium	7440-39-3	LA-505-412	BN	0.245		mg/kg	1	0.19	1.9	07/29/11
Beryllium	7440-41-7	LA-505-412	U	<0.097	LS 8-26-2011	mg/kg	1	0.097	0.48	07/29/11
Cadmium	7440-43-9	LA-505-412	U	<0.097		mg/kg	1	0.097	0.97	07/29/11
Chromium	7440-47-3	LA-505-412	U	<0.48		mg/kg	1	0.48	4.8	07/29/11
Cobalt	7440-48-4	LA-505-412	U	<0.097		mg/kg	1	0.097	0.48	07/29/11
Copper	7440-50-8	LA-505-412	B	0.141		mg/kg	1	0.097	0.97	07/29/11

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

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

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Narrative

Attachment 2
Narrative
WSCF112777

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. 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, U and J) may be applicable to this report, as appropriate

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

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

1

Attachment 2
Narrative
WSCF112777

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):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable 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):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Manganese, and Antimony – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Organic Comments

Semi-VOA – 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):

- Pyrene did not meet the MS and or MSD acceptance limits. Sample results for this analytes were "T" Flagged.
- All other applicable QC controls are within the established limits.

Radiochemistry Comments

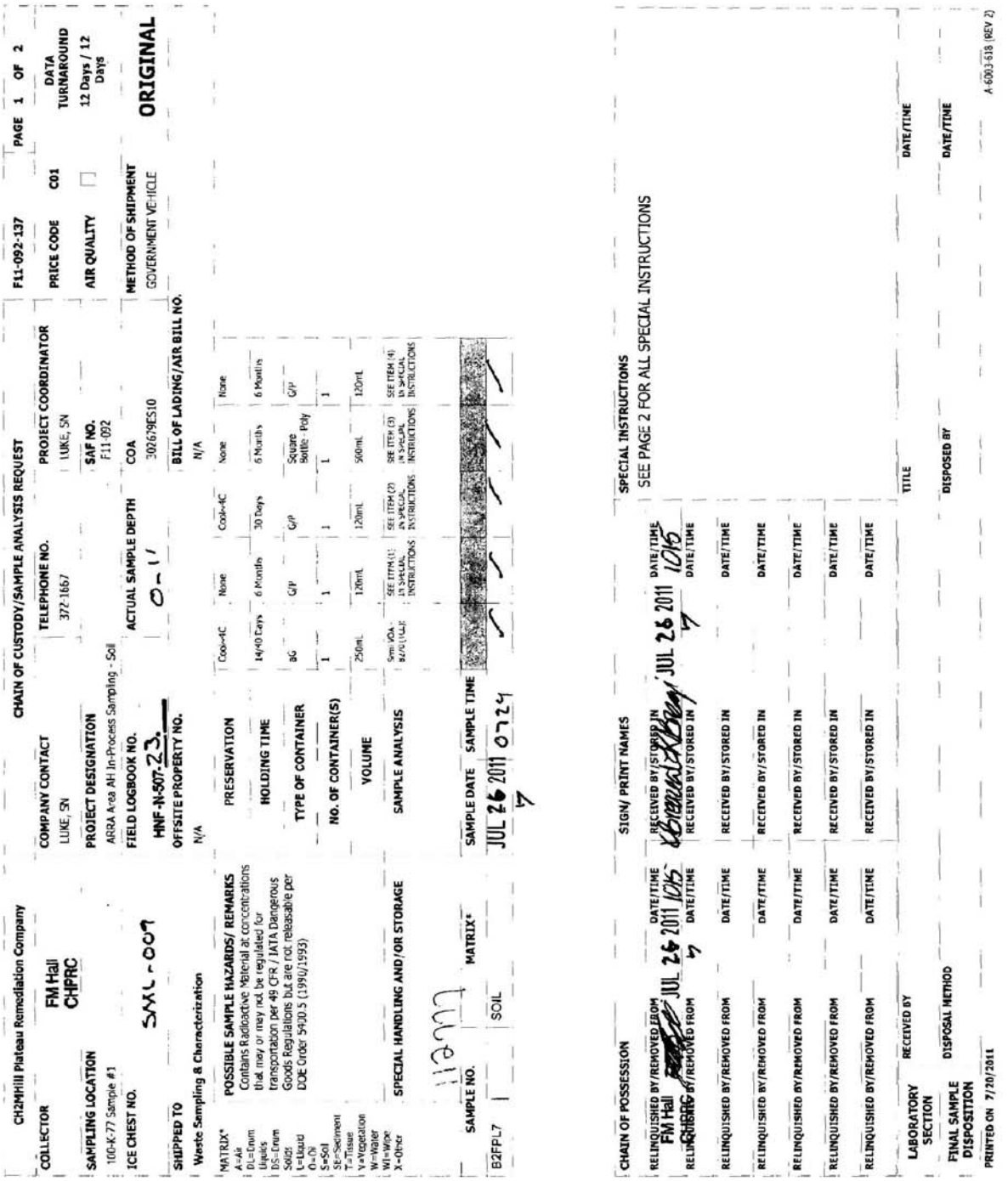
Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Gamma Energy Analysis:
  - Cesium-137 – 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 applicable QC controls are within the established limits.

- Gross Alpha / Gross Beta:
    - All applicable QC controls are within the established limits.

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

Sample Receipt



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #1

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SXSL-009

FIELD LOGBOOK NO.: HNF-N-307-23.

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

MATRIX*: A=Air, DI=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

PRESERVATION	Cool-4C	None	Cool-4C	None	None	None		
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months	6 Months		
TYPE OF CONTAINER	BG	G/P	G/P	Square Bottle - Poly	G/P			
NO. OF CONTAINER(S)	1	1	1	1	1			
VOLUME	250mL	120mL	120mL	500mL	120mL			
SAMPLE ANALYSIS	5mlVOA-8270(LL)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS			

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2FPL7	SOIL	JUL 26 2011	0724

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM: FM Hall	DATE/TIME: JUL 26 2011 1015	RECEIVED BY/STORED IN: [signature] JUL 26 2011	DATE/TIME: 1015
RELINQUISHED BY/REMOVED FROM: [signature]	DATE/TIME	RECEIVED BY/STORED IN: [signature]	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

LABORATORY SECTION: RECEIVED BY — TITLE — DATE/TIME

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

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

Friday, July 29, 2011 8:36:30 AM

Page 3 of 14

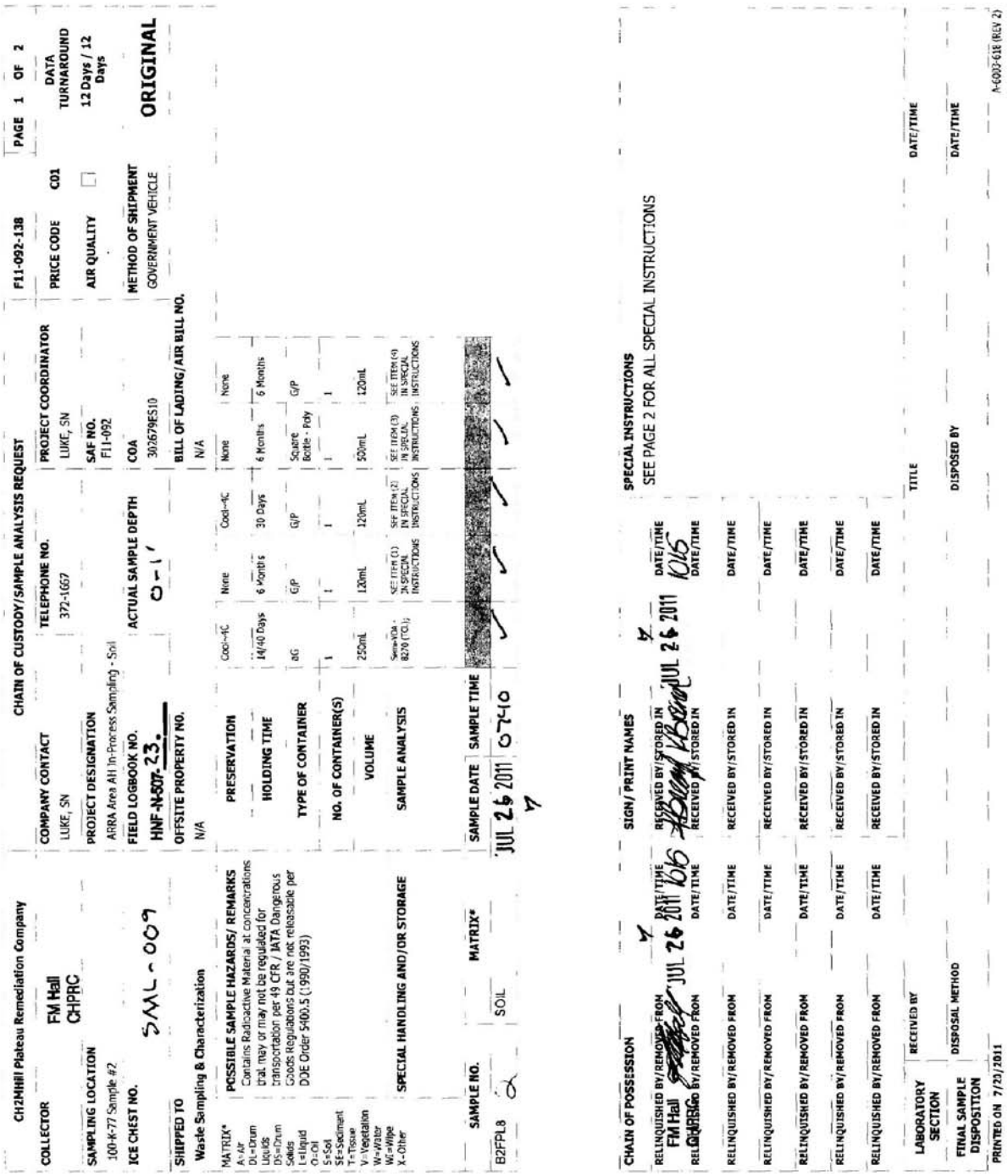
CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-137	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #1	PROJECT DESIGNATION: ARRA Area All In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SML-009	FIELD LOGBOOK NO.: HNF-N-507-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH {Soil} - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen-in Nitrate, Nitrogen-in Nitrite, Sulfate};~~ 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

PRINTED ON 7/20/2011

A-6003-618 (REV 2)



CH2MHill Plateau Remediation Company | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | **F11-092-138** | **PAGE 1 OF 2**

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01
SAMPLING LOCATION 100-K-77 Sample #2	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-N-507-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

DATA TURNAROUND
12 Days / 12 Days

ORIGINAL

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPL8 2	SOIL	JUL 26 2011 7	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** JUL 26 2011 7 1016	**RECEIVED BY/STORED IN**	**DATE/TIME** JUL 26 2011 7 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

PRINTED ON 7/23/2011

A-6003-618 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-138	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #2	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL-009	FIELD LOGBOOK NO.: HNF-N-507-23.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ TMD 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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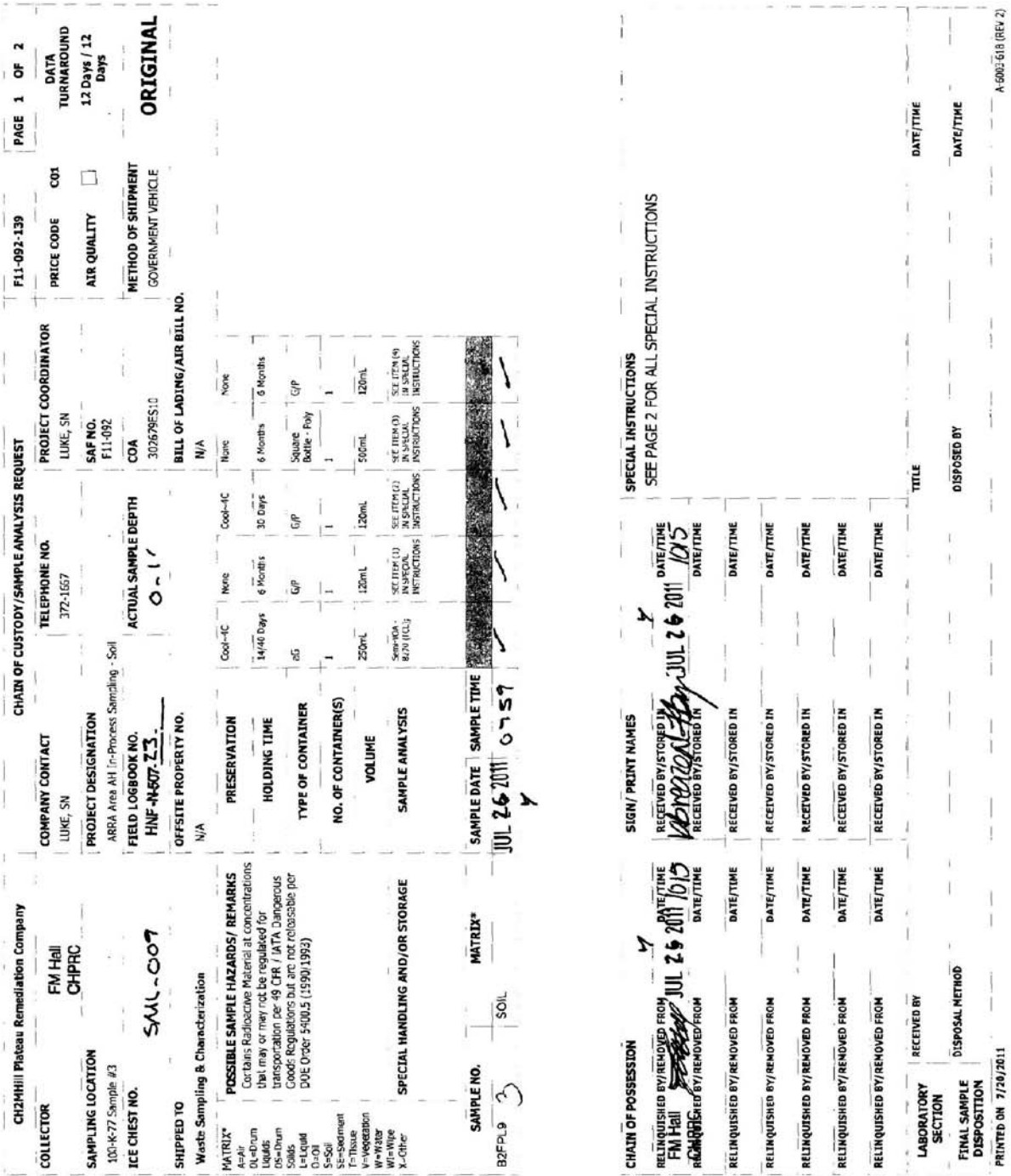
A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: 01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SAL-007

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	VOLUME	NO. OF CONTAINER(S)	TYPE OF CONTAINER	HOLDING TIME	PRESERVATION	POSSIBLE SAMPLE HAZARDS/ REMARKS
B2FPL9	SOIL	JUL 26 2011	0759		Semi-VOA - 8270 (TCL)	250mL	1	8oz Glass Jar	14/40 Days	Cool-4C	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)
					SEE ITEM (1) IN SPECIAL INSTRUCTIONS	120mL	1	8oz Glass Jar	6 Months	None	
					SEE ITEM (2) IN SPECIAL INSTRUCTIONS	120mL	1	8oz Glass Jar	30 Days	Cool-4C	
					SEE ITEM (3) IN SPECIAL INSTRUCTIONS	500mL	1	Square Bottle - Poly	6 Months	None	
					SEE ITEM (4) IN SPECIAL INSTRUCTIONS	120mL	1	Square Bottle - Poly	6 Months	None	

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

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM	FM Hall CHPRC	JUL 26 2011 1615	
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			DATE/TIME

LABORATORY SECTION — RECEIVED BY — TITLE — DATE/TIME

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

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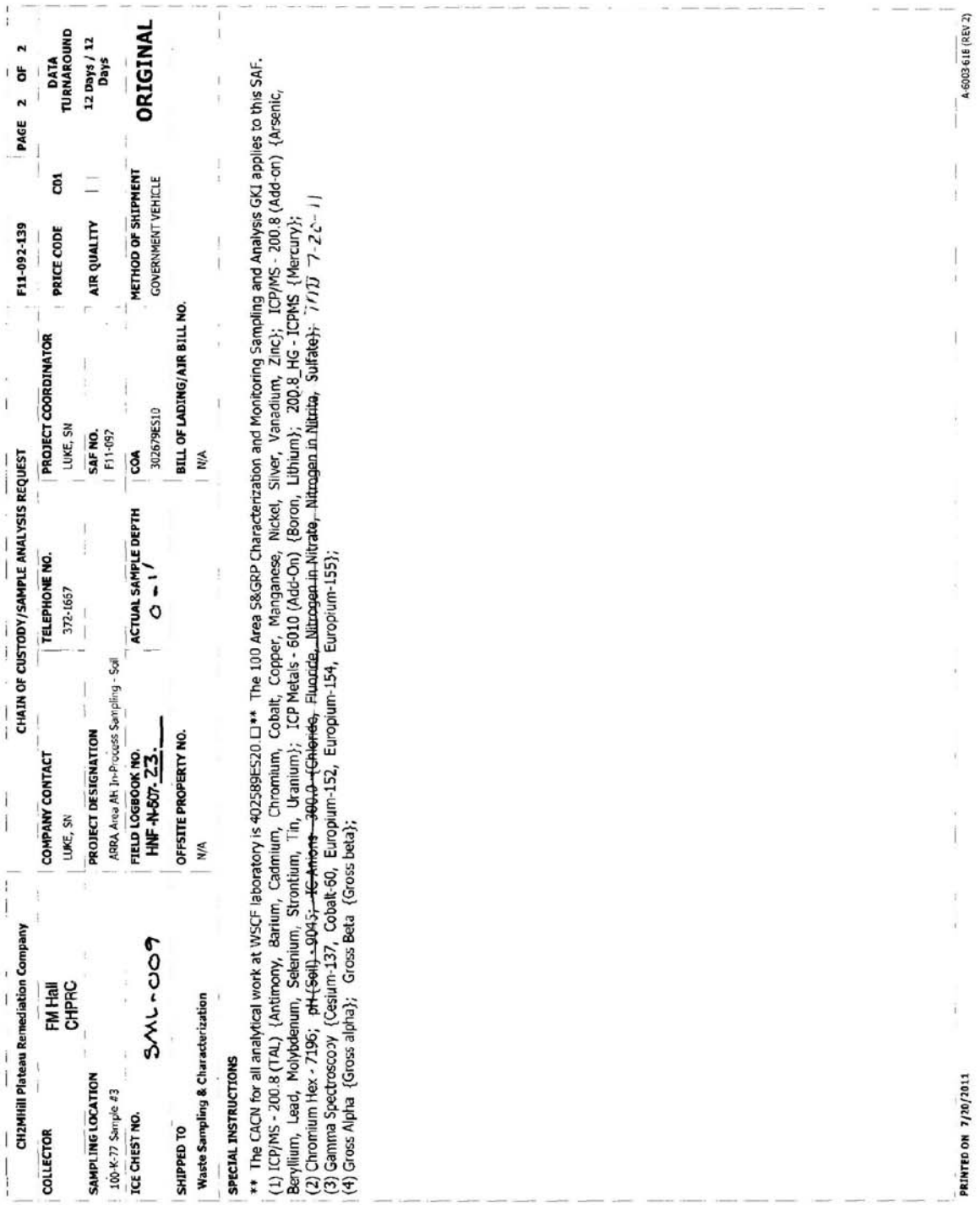
A-6002-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SML-009

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKJ 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 - (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)~~; 7/13 7-26-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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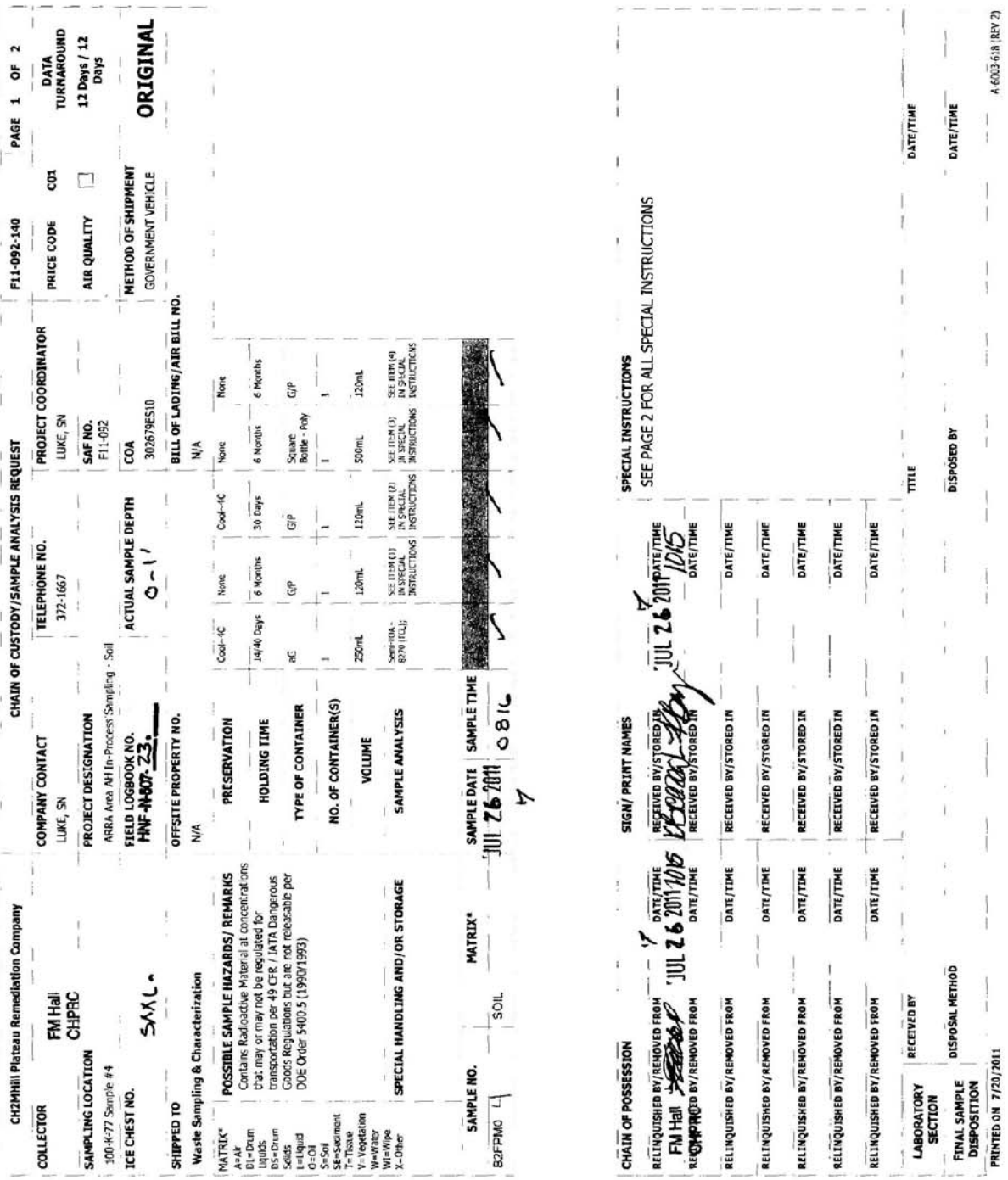
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-140

PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: 01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #4

PROJECT DESIGNATION: ARRA Area All In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY

ICE CHEST NO.: SAL-

FIELD LOGBOOK NO.: HNF-N807-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

Waste Sampling & Characterization

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

PRESERVATION: Cool~4C | None | Cool~4C | None

HOLDING TIME: 14/40 Days | 6 Months | 30 Days | 6 Months

TYPE OF CONTAINER: aG | G/P | G/P | Square Bottle - Poly | G/P

NO. OF CONTAINER(S): 1 | 1 | 1 | 1 | 1

VOLUME: 250mL | 120mL | 120mL | 500mL | 120mL

SAMPLE ANALYSIS: Semi-VOA - 8270 (TCL); SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | SEE ITEM (3) IN SPECIAL INSTRUCTIONS | SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2FPM0	SOIL	JUL 26 2011	0816

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM: FM Hall CHPRC — DATE/TIME: JUL 26 2011 1045

RECEIVED BY/STORED IN — DATE/TIME: JUL 26 2011 1045

RELINQUISHED BY/REMOVED FROM — DATE/TIME

RECEIVED BY/STORED IN — DATE/TIME

RELINQUISHED BY/REMOVED FROM — DATE/TIME

RECEIVED BY/STORED IN — DATE/TIME

RELINQUISHED BY/REMOVED FROM — DATE/TIME

RECEIVED BY/STORED IN — DATE/TIME

RELINQUISHED BY/REMOVED FROM — DATE/TIME

RECEIVED BY/STORED IN — DATE/TIME

RELINQUISHED BY/REMOVED FROM — DATE/TIME

RECEIVED BY/STORED IN — DATE/TIME

LABORATORY SECTION RECEIVED BY — TITLE — DATE/TIME

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

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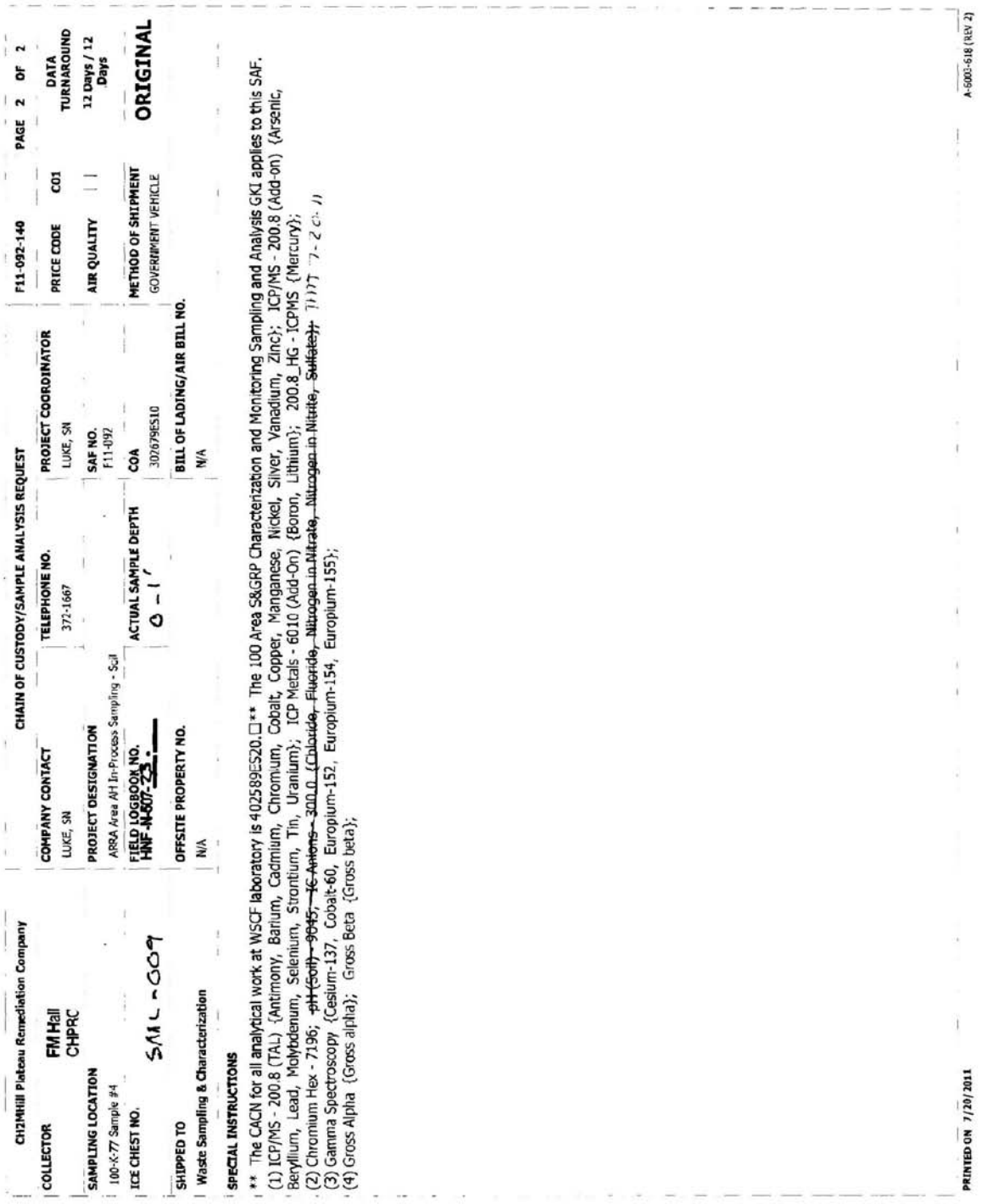
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-140

PAGE 2 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #4

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

ICE CHEST NO.: SAL-1509

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679ES10

BILL OF LADING/AIR BILL NO.: N/A

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_Hg - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7199 7-2 ck
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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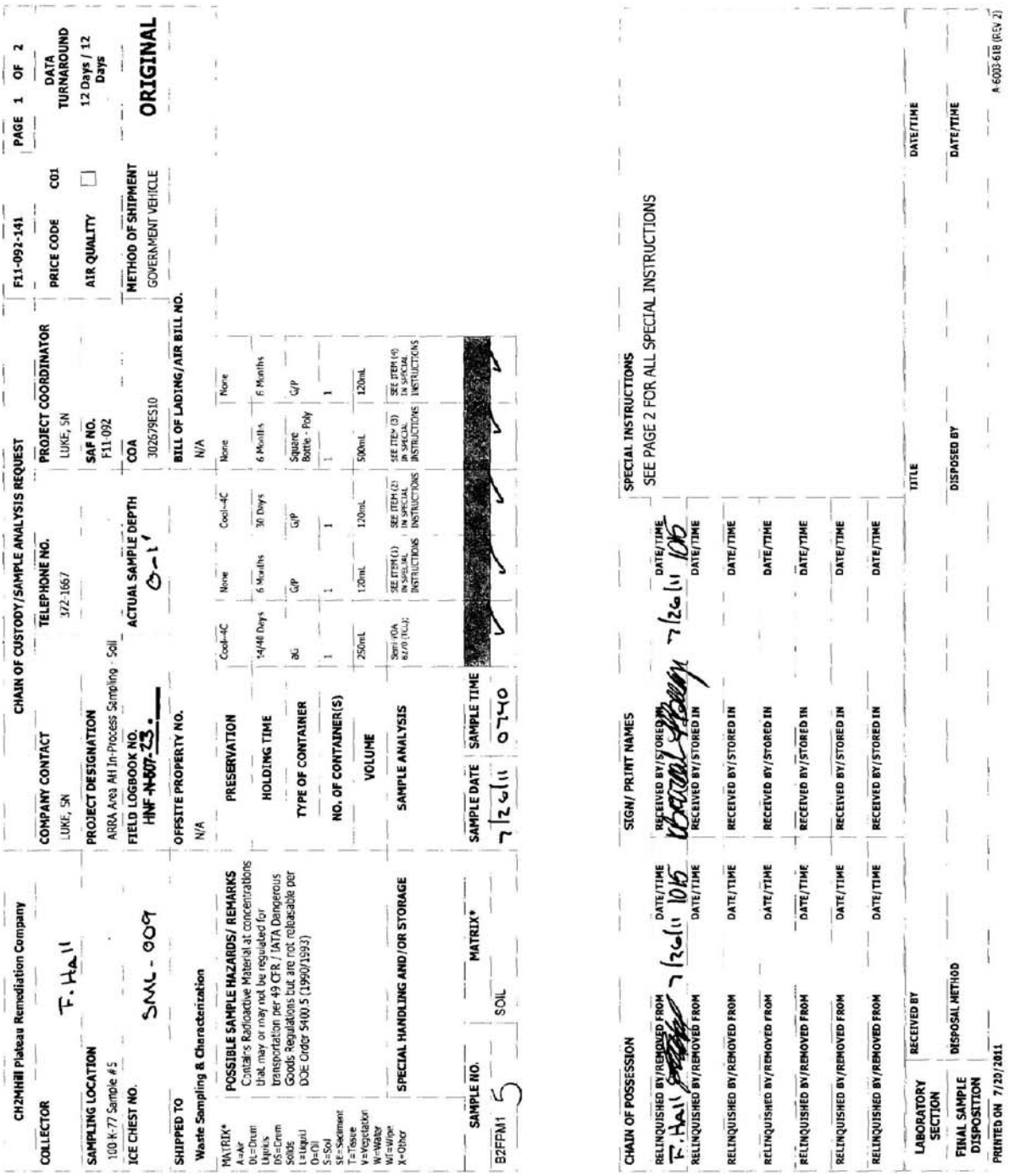

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 1 **OF** 2

COLLECTOR F. Hall	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01	**DATA TURNAROUND**
				AIR QUALITY ☐	12 Days / 12 Days
SAMPLING LOCATION 100-K-77 Sample #5	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092		
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-N-507-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	**ORIGINAL**
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPM1 5	SOIL	7/26/11	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
F. Hall	7/26/11 1015		7/26/11 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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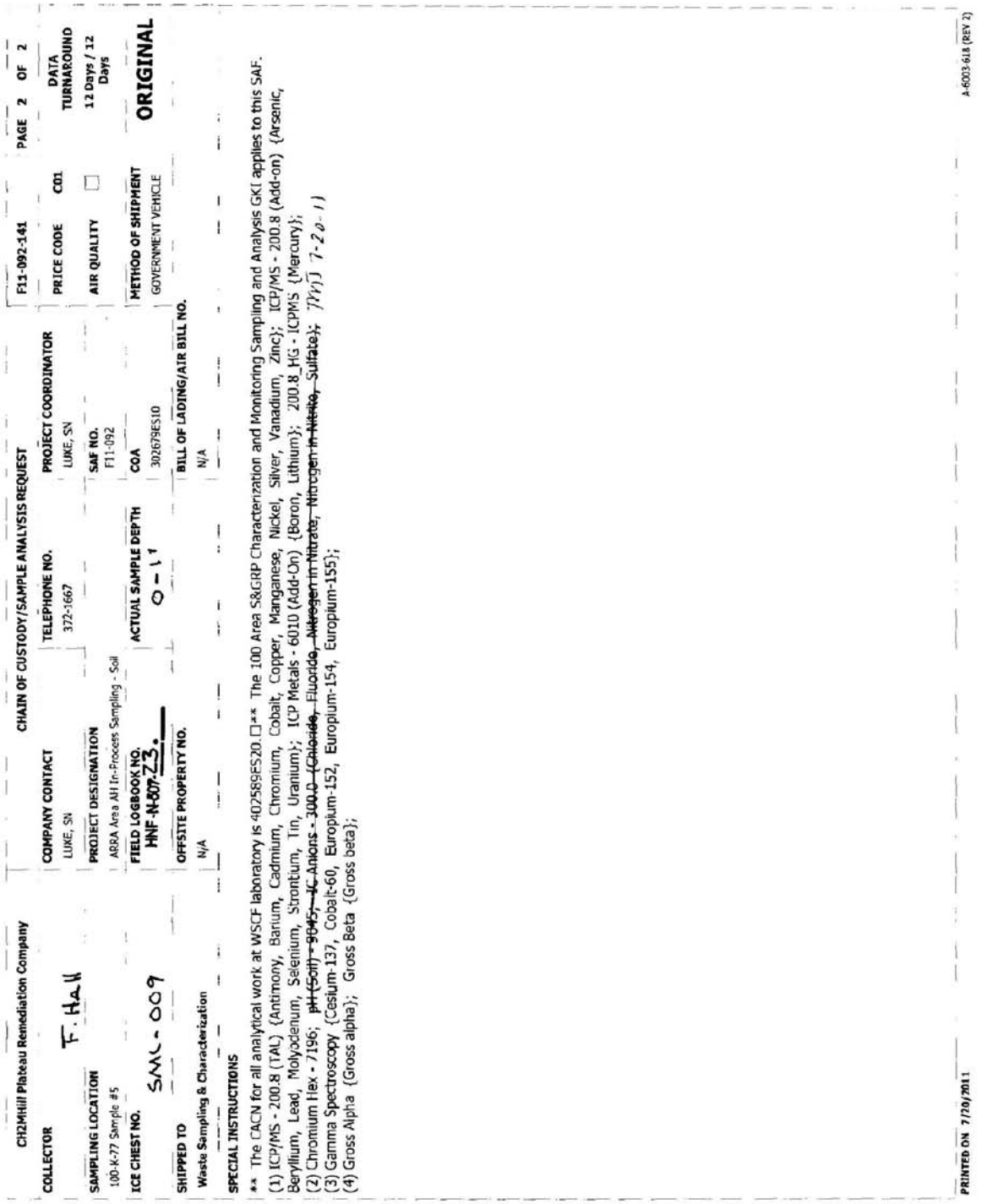
A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 2 OF 2

COLLECTOR: F. Hall

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #5

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SMC-009

FIELD LOGBOOK NO.: HNF-N-807-23.

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20. ☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7196 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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Friday, July 29, 2011 8:36:30 AM

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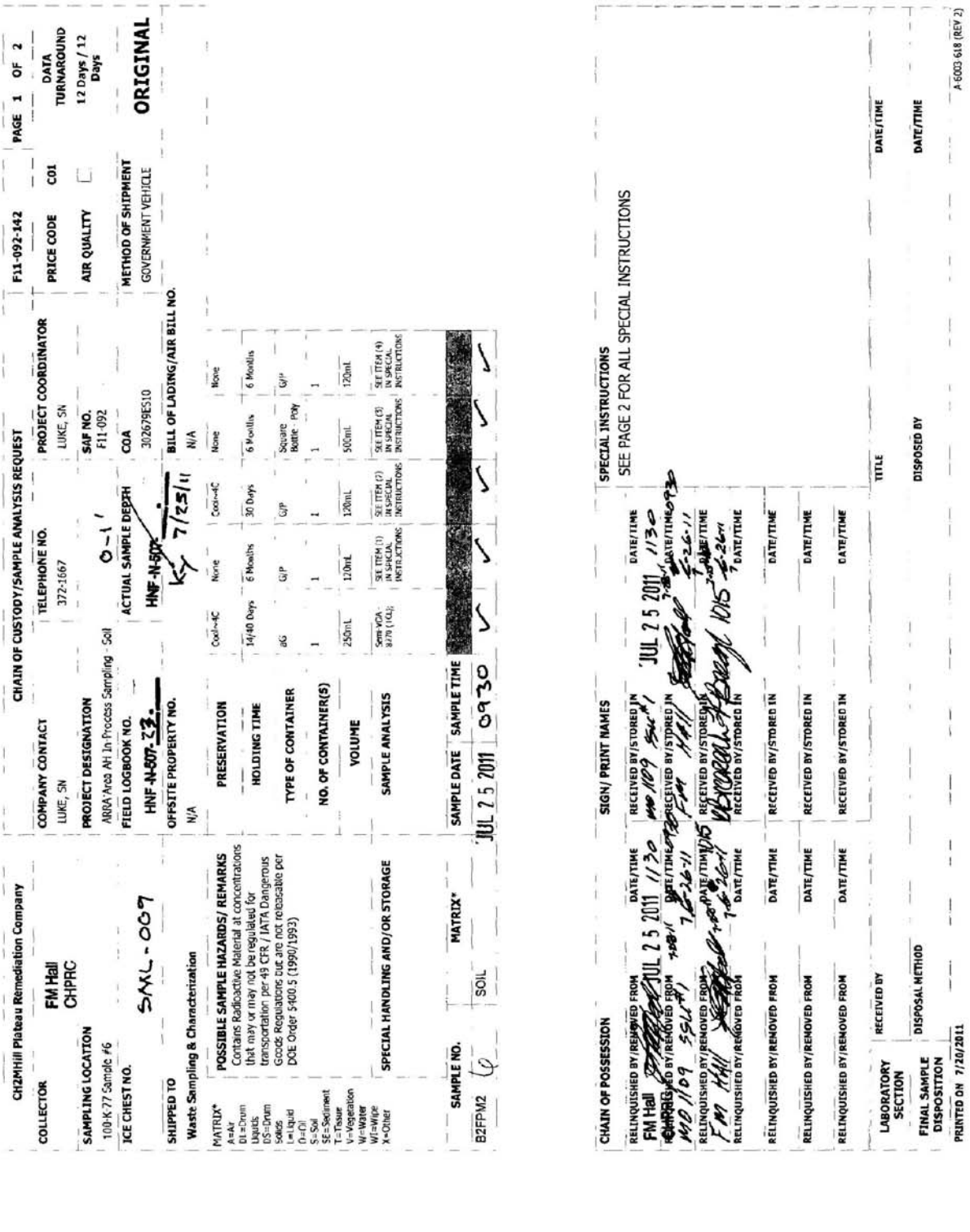
Sample Receipt

Chain of Custody



Friday, July 29, 2011 8:36:30 AM

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-142	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #6	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAL-009	FIELD LOGBOOK NO.: HNF-N-507-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)~~; TMJ 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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A-6003-618 (REV 2)

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100K Area AH Waste Site 100-K-77			DATA PACKAGE: VSR11-054		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 8-26-2011	
			SDG: WSCF112777		
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	Cyanide	

SAMPLES/MATRIX Soil samples

B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2

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:

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
Spike standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
Spike standards expired? (Levels D, E)	Yes	No	(N/A)
LCS/BSS samples analyzed?	(Yes)	No	N/A
LCS/BSS results acceptable?	(Yes)	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(N/A)
Standards expired? (Levels D, E)	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)
Performance audit sample(s) analyzed?	Yes	No	(N/A)
Performance audit sample results acceptable?	Yes	No	(N/A)

Comments: None

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

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: None

Appendix 6

Additional Documentation Requested By Client

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF112777

QC Batch 187061 **Test** Hexavalent chromium
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #61670**								
Hexavalent chromium	18540-29-9		<0.10	ug/g						U	07/28/11
LCS			**QC Sample #61671**								
Hexavalent chromium	18540-29-9		4.11	ug/g	103.1	80 - 120					07/28/11
DUP			**QC Sample #61672**								
			Original 112775001								
Hexavalent chromium	18540-29-9		<0.10	ug/g			77.20	30	*	UX	07/28/11
MS			**QC Sample #61673**								
			Original 112775001								
Hexavalent chromium	18540-29-9		2.87	ug/g	72.1	75 - 125				N	07/28/11
PSTSPK			**QC Sample #61674**								
Hexavalent chromium	18540-29-9		0.0408	ug/g	81.6	85 - 115				N	07/28/11
IMS			**QC Sample #61675**								
			Original 112775001								
Hexavalent chromium	18540-29-9		309	ug/g	92	75 - 125				D	07/28/11

Date: 26 August 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100K Area AH Waste Site 100-K-77
Subject: Radiochemical - Sample Data Group (SDG) WSCF112777

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF112777 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
B2FPL7	7/26/2011	Soil	C	Gamma & Gross αβ
B2FPL8	7/26/2011	Soil	C	Gamma & Gross αβ
B2FPL9	7/26/2011	Soil	C	Gamma & Gross αβ
B2FPM0	7/26/2011	Soil	C	Gamma & Gross αβ
B2FPM1	7/26/2011	Soil	C	Gamma & Gross αβ
B2FPM2	7/25/2011	Soil	C	Gamma & Gross αβ

Data validation was conducted in accordance with the CHPRC validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan, DOE/RL-96-22, Rev. 5 (SAP). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

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

The samples were analyzed within the prescribed holding time.

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by reviewing 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 matrix spike sample accuracy limits are ones specified by the DV procedure. 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 analytical methods performed.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

Carrier/Tracer Recovery Factors

Chemical/tracer recovery factors are not applicable to the analytical methods performed.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate, field duplicate, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The RPD limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits

and have associated results <5X the MDCs the precision limits are ones specified by the DV procedure.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

All field duplicate results were acceptable with the following exception. Samples B2FPL8 and B2FPM1 had a Cs-137 RPD = 76% and relative error ratio = 2.7. No sample data were qualified as a result.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

The Eu-155 MDC for sample B2FPL7 was slightly > the CRDL. The Eu-152, Eu-154 and Eu-155 MDCs for samples B2FPL8, B2FPL9, B2FPM0 and B2FPM1 were slightly > the CRDLs

- **Completeness**

SDG WSCF112777 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

There were no minor deficiencies leading to qualification of sample results as estimates.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

- **U ─** The constituent was analyzed for and was not detected. The data should be considered usable for decision-making purposes.

- **UJ ─** The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the MDC. The data should be considered usable for decision-making purposes.

- **J ─** Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+ ─** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J- ─** Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **UR ─** Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

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

Appendix 2

Summary of Data Qualification

Radiochemical Data Qualification Summary			
SDG: WSCF112777	Reviewer: AQA	Project: 100K Area AH Waste Site 100-K-77	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Radiochemical	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777001
SAF# F11-092
Sample ID B2FPL7

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415	U	0.67	.72	pCi/g	1	1.3		08/01/11
Gross Beta	12587-47-2	LA-508-415		2.9	1.1	pCi/g	1	1.7		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	2.6E-3	.018	pCi/g	1	0.034		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	-0.014	.015	pCi/g	1	0.025		07/26/11
Europium-152	14683-23-9	LA-508-481	U	-0.051	.043	pCi/g	1	0.075		07/26/11
Europium-154	15585-10-1	LA-508-481	U	-0.014	.047	pCi/g	1	0.090		07/26/11
Europium-155	14391-16-3	LA-508-481	U	0.021	.065	pCi/g	1	0.12		07/26/11

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

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

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777002
SAF# F11-092
Sample ID B2FPL8

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415		1.2	.77	pCi/g	1	1.2		08/01/11
Gross Beta	12587-47-2	LA-508-415		2.6	1.1	pCi/g	1	1.6		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.47	.082	pCi/g	1	0.040		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	0.011	.021	pCi/g	1	0.041		07/26/11
Europium-152	14683-23-9	LA-508-481	U	-0.017	.09	pCi/g	1	0.13		07/26/11
Europium-154	15585-10-1	LA-508-481	U	-6.2E-3	.061	pCi/g	1	0.12		07/26/11
Europium-155	14391-16-3	LA-508-481	U	0.051	.097	pCi/g	1	0.18		07/26/11

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

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

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777003
SAF# F11-092
Sample ID B2FPL9

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415	U	1.0	.73	pCi/g	1	1.1		08/01/11
Gross Beta	12587-47-2	LA-508-415		2.5	.99	pCi/g	1	1.5		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	0.021	.028	pCi/g	1	0.054		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	0.014	.023	pCi/g	1	0.046		07/26/11
Europium-152	14683-23-9	LA-508-481	U	-6.4E-3	.074	pCi/g	1	0.12		07/26/11
Europium-154	15585-10-1	LA-508-481	U	-0.033	.081	pCi/g	1	0.15		07/26/11
Europium-155	14391-16-3	LA-508-481	U	0.035	.09	pCi/g	1	0.17		07/26/11

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

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

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777004
SAF# F11-092
Sample ID B2FPM0

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415		1.8	.85	pCi/g	1	1.6		08/01/11
Gross Beta	12587-47-2	LA-508-415		3.1	1.1	pCi/g	1	2.1		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	0.020	.025	pCi/g	1	0.053		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	5.7E-5	.02	pCi/g	1	0.048		07/26/11
Europium-152	14683-23-9	LA-508-481	U	-0.11	.093	pCi/g	1	0.15		07/26/11
Europium-154	15585-10-1	LA-508-481	U	-0.031	.058	pCi/g	1	0.13		07/26/11
Europium-155	14391-16-3	LA-508-481	U	0.22	.13	pCi/g	1	0.23		07/26/11

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

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

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777005
SAF# F11-092
Sample ID B2FPM1

Matrix SOIL
Sampled 07/26/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415	U	0.63	.69	pCi/g	1	1.2		08/01/11
Gross Beta	12587-47-2	LA-508-415		3.3	1.1	pCi/g	1	1.6		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481		0.21	.053	pCi/g	1	0.040		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	1.4E-3	.019	pCi/g	1	0.038		07/26/11
Europium-152	14683-23-9	LA-508-481	U	0.070	.091	pCi/g	1	0.11		07/26/11
Europium-154	15585-10-1	LA-508-481	U	-0.048	.066	pCi/g	1	0.12		07/26/11
Europium-155	14391-16-3	LA-508-481	U	0.11	.09	pCi/g	1	0.17		07/26/11

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

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

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

Sample # 112777006
SAF# F11-092
Sample ID B2FPM2

Matrix SOIL
Sampled 07/25/11
Received 07/26/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**07/27/11**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415	U	-0.12	.42	pCi/g	1	0.83		08/01/11
Gross Beta	12587-47-2	LA-508-415	U	-0.11	.76	pCi/g	1	1.3		08/01/11
GEA Prep										**07/26/11**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	-6.2E-3	.013	pCi/g	1	0.022		07/26/11
Cobalt-60	10198-40-0	LA-508-481	U	-2.3E-3	.012	pCi/g	1	0.021		07/26/11
Europium-152	14683-23-9	LA-508-481	U	1.9E-3	.037	pCi/g	1	0.064		07/26/11
Europium-154	15585-10-1	LA-508-481	U	4.5E-3	.033	pCi/g	1	0.062		07/26/11
Europium-155	14391-16-3	LA-508-481	U	6.6E-3	.046	pCi/g	1	0.083		07/26/11

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

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Narrative

Attachment 2
Narrative
WSCF112777

Introduction

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. 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, U and J) may be applicable to this report, as appropriate

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

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

Attachment 2
Narrative
WSCF112777

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):

- Boron – Detected in the Blank and evaluated. Affected sample results in this batch were "C" Flagged.
- All other applicable 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):

- Barium, Manganese and Strontium – MS / MSD Relative Percent Difference (RPD) is outside established laboratory limits. The quality control report was flagged for RPD failure.
- Barium, Manganese, and Antimony – Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were "N" flagged.
- All other applicable QC controls are within the established limits.

Organic Comments

Semi-VOA – 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):

- Pyrene did not meet the MS and or MSD acceptance limits. Sample results for this analytes were "T" Flagged.
- All other applicable QC controls are within the established limits.

Radiochemistry Comments

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

- Gamma Energy Analysis:
  - Cesium-137 – 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 applicable QC controls are within the established limits.

2

- Gross Alpha / Gross Beta:
    - All applicable QC controls are within the established limits.

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

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-092-137 — PAGE 1 OF 2

COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
SAMPLING LOCATION: 100-K-77 Sample #1	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092
ICE CHEST NO.: SMSL-009	FIELD LOGBOOK NO.: HNF-N-507-23	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: C01 — DATA TURNAROUND: 12 Days / 12 Days
AIR QUALITY: ☐
METHOD OF SHIPMENT: GOVERNMENT VEHICLE
ORIGINAL

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Sml VOA - 8270 (HLA)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
112777			
B2FPL7	SOIL	JUL 26 2011	0724

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
FM Hall CHPRC	JUL 26 2011 1015	K Brewster/K Brewster	JUL 26 2011 1015
	DATE/TIME		DATE/TIME
	DATE/TIME		DATE/TIME
	DATE/TIME		DATE/TIME
	DATE/TIME		DATE/TIME
	DATE/TIME		DATE/TIME
	DATE/TIME		DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

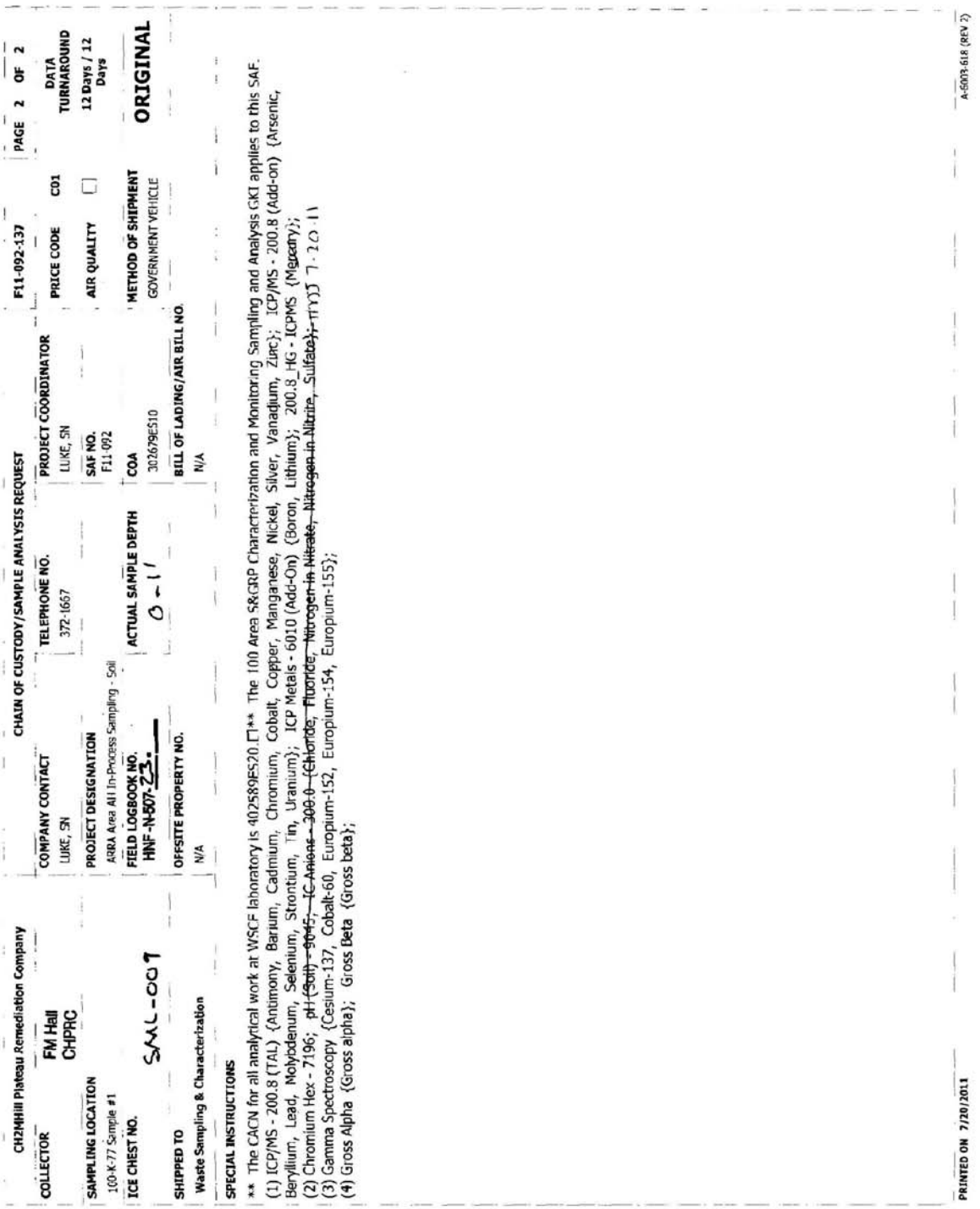
LABORATORY SECTION — RECEIVED BY — TITLE — DATE/TIME
FINAL SAMPLE DISPOSITION — DISPOSAL METHOD — DISPOSED BY — DATE/TIME

PRINTED ON 7/20/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-137

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #1

PROJECT DESIGNATION: ARRA Area All In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SAL-001

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 302679E510

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKT 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen-in Nitrate, Nitrogen-in Nitrite, Sulfate)~~; TTO 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

PRINTED ON 7/20/2011

A-5003-618 (REV 2)

Friday, July 29, 2011 8:36:30 AM

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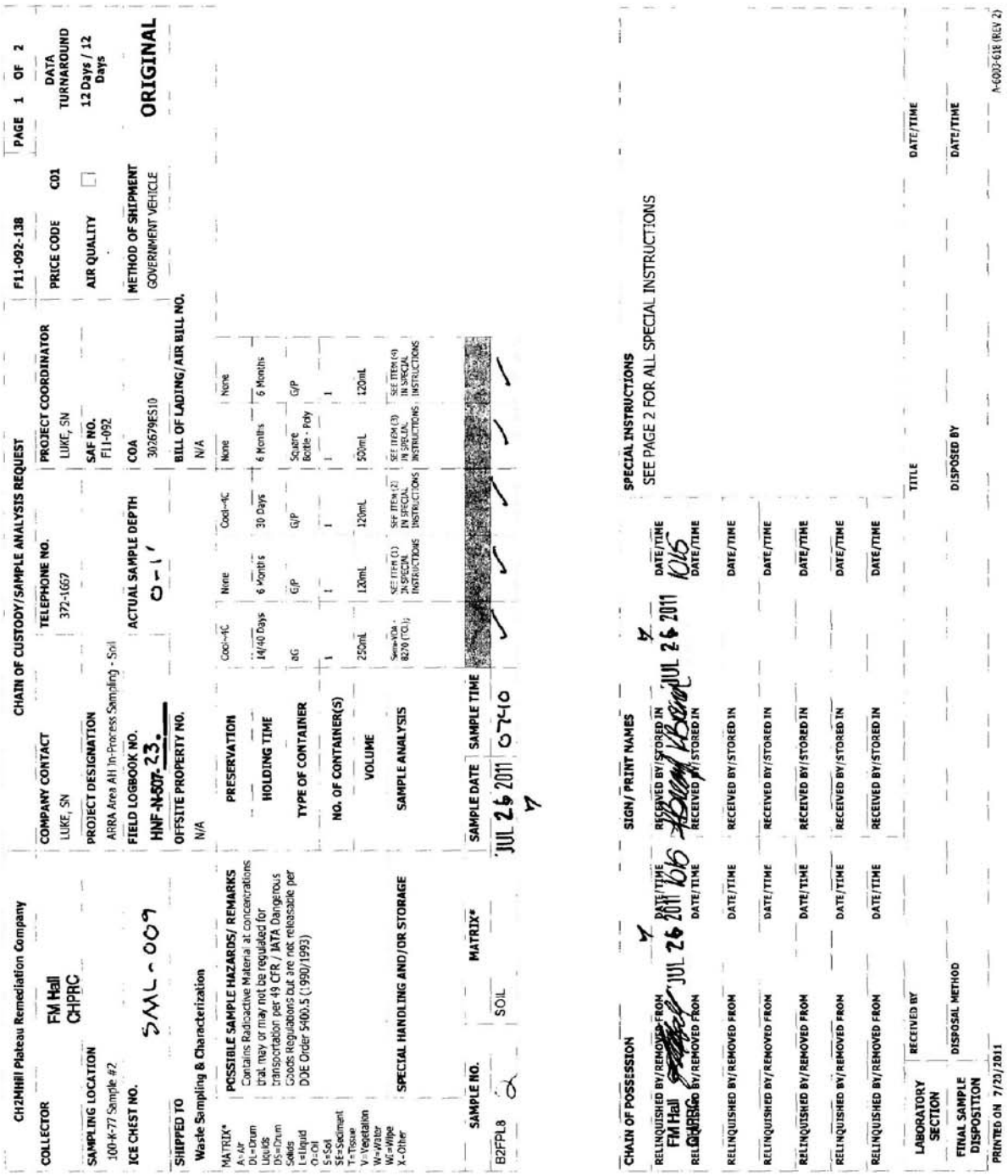

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-138

PAGE 1 OF 2

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01 **AIR QUALITY** ☐
SAMPLING LOCATION 100-K-77 Sample #2	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**DATA TURNAROUND** 12 Days / 12 Days
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-N-507-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	**ORIGINAL**

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2FPL8 2	SOIL	JUL 26 2011 7	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	DATE/TIME 7 JUL 26 2011 1016	RECEIVED BY/STORED IN	DATE/TIME 7 JUL 26 2011 1016
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

PRINTED ON 7/23/2011

A-6003-618 (REV 2)

Chain of Custody

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-092-138	PAGE 2 OF 2
COLLECTOR: FM Hall CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: 100-K-77 Sample #2	PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil		SAF NO.: F11-092	AIR QUALITY: ☐	
ICE CHEST NO.: SAAL-009	FIELD LOGBOOK NO.: HNF-N-507-23.	ACTUAL SAMPLE DEPTH: 0-1'	COA: 302679ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ TMD 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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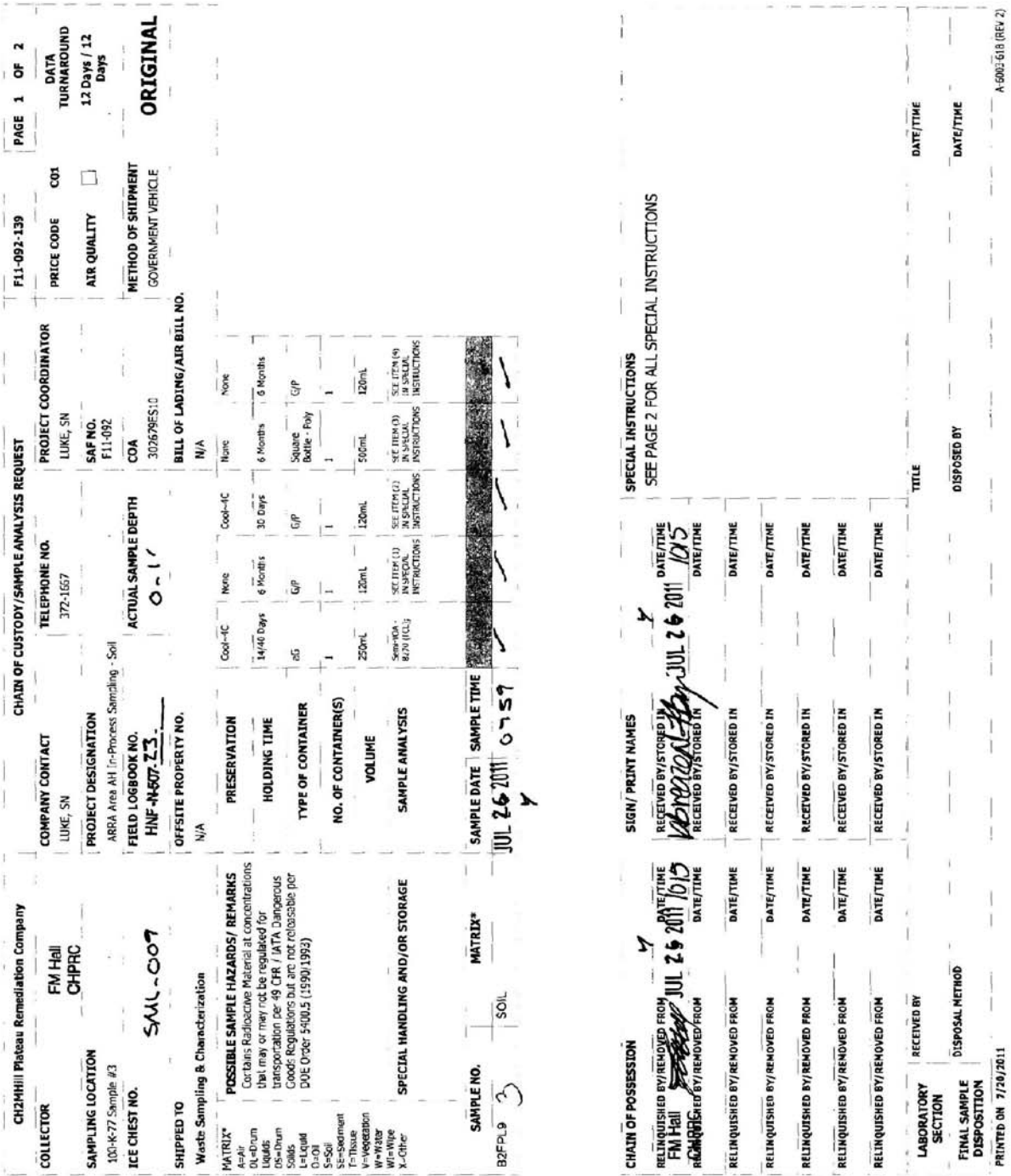
A-6003-618 (REV 2)

Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 1 OF 2

COLLECTOR: FM Hall, CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: 01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SAL-007

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 30267985110

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

PRESERVATION: Cool-4C | None | Cool-4C | None | None

HOLDING TIME: 14/40 Days | 6 Months | 30 Days | 6 Months | 6 Months

TYPE OF CONTAINER: aG | G/P | G/P | Square Bottle - Poly | G/P

NO. OF CONTAINER(S): 1 | 1 | 1 | 1 | 1

VOLUME: 250mL | 120mL | 120mL | 500mL | 120mL

SAMPLE ANALYSIS: Semi-VOA - 8270 (TCL) | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | SEE ITEM (3) IN SPECIAL INSTRUCTIONS | SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SPECIAL HANDLING AND/OR STORAGE	SAMPLE DATE	SAMPLE TIME
B2FPL9	SOIL		JUL 26 2011	0759

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS: SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM: FM Hall, CHPRC, JUL 26 2011 1015

RECEIVED BY/STORED IN: JUL 26 2011 1015

RELINQUISHED BY/REMOVED FROM: DATE/TIME

RECEIVED BY/STORED IN: DATE/TIME

RELINQUISHED BY/REMOVED FROM: DATE/TIME

RECEIVED BY/STORED IN: DATE/TIME

RELINQUISHED BY/REMOVED FROM: DATE/TIME

RECEIVED BY/STORED IN: DATE/TIME

RELINQUISHED BY/REMOVED FROM: DATE/TIME

RECEIVED BY/STORED IN: DATE/TIME

RELINQUISHED BY/REMOVED FROM: DATE/TIME

RECEIVED BY/STORED IN: DATE/TIME

LABORATORY SECTION: RECEIVED BY | TITLE | DATE/TIME

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

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A-6002-618 (REV 2)

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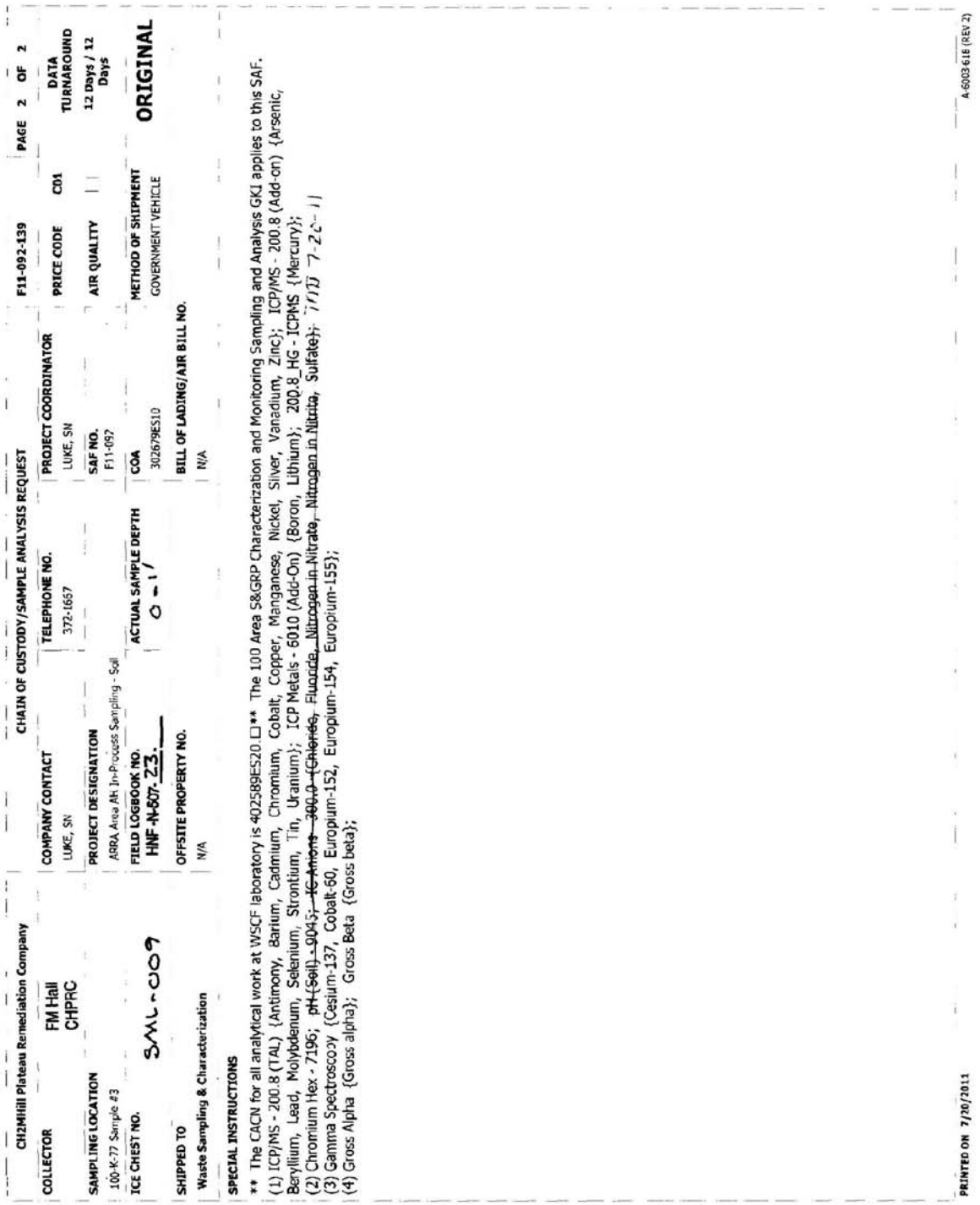
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-139

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1657

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #3

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

ICE CHEST NO.: SML-009

FIELD LOGBOOK NO.: HNF-N-507-23

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKJ 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 - (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)~~; 7/13 7-26-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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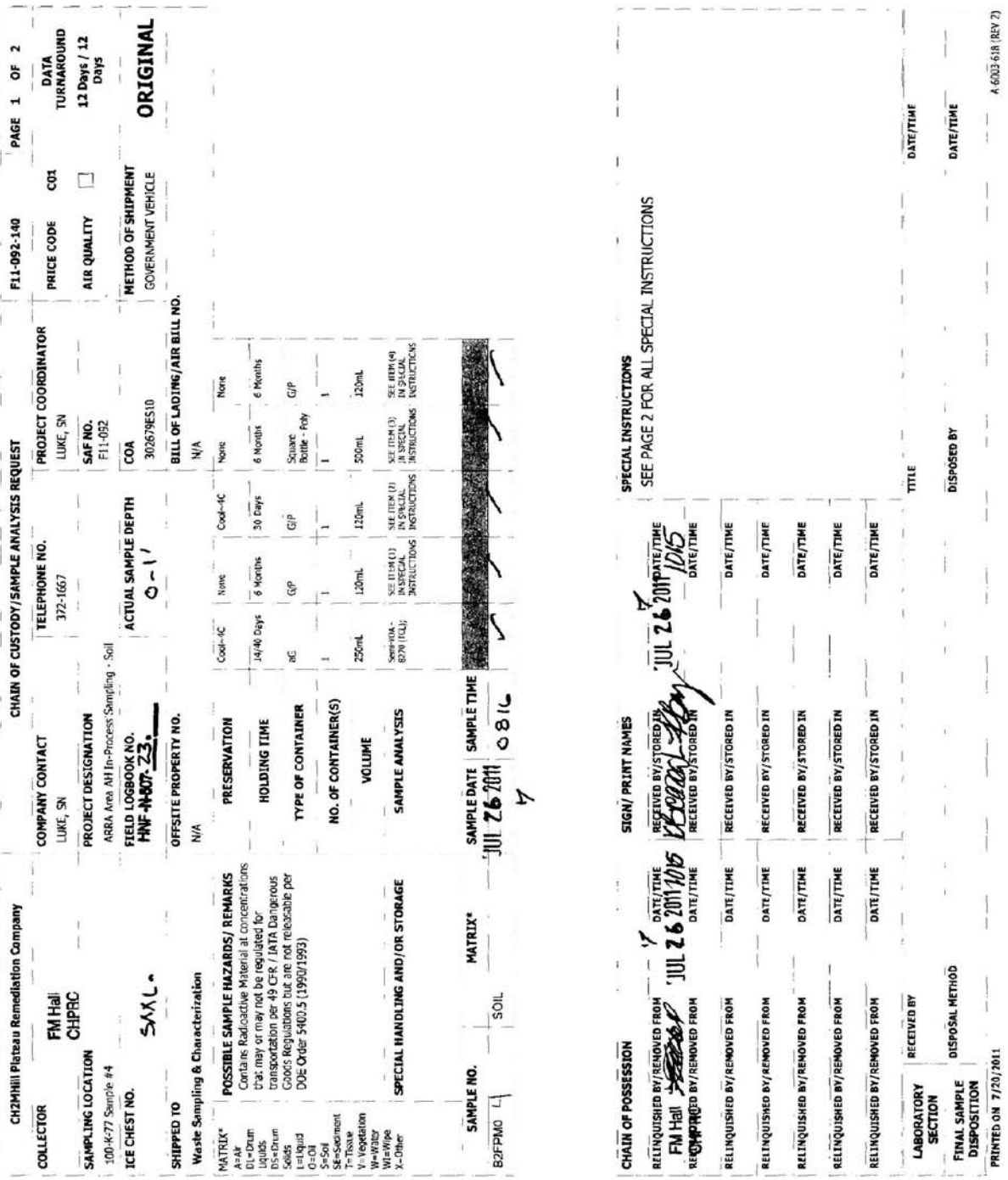

CH2MHill Plateau Remediation Company | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | **F11-092-140** | **PAGE 1 OF 2**

COLLECTOR FM Hall CHPRC	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01 **DATA TURNAROUND** 12 Days / 12 Days
SAMPLING LOCATION 100-K-77 Sample #4	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
ICE CHEST NO. SAXL.	**FIELD LOGBOOK NO.** HNF-N-807-23.	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE **ORIGINAL**
SHIPPED TO **Waste Sampling & Characterization**	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA - 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B2FPM0 4	SOIL	JUL 26 2011 7	0816	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		**SIGN/ PRINT NAMES**	
RELINQUISHED BY/REMOVED FROM FM Hall CHPRC	**DATE/TIME** JUL 26 2011 7 1015	**RECEIVED BY/STORED IN**	**DATE/TIME** JUL 26 2011 7 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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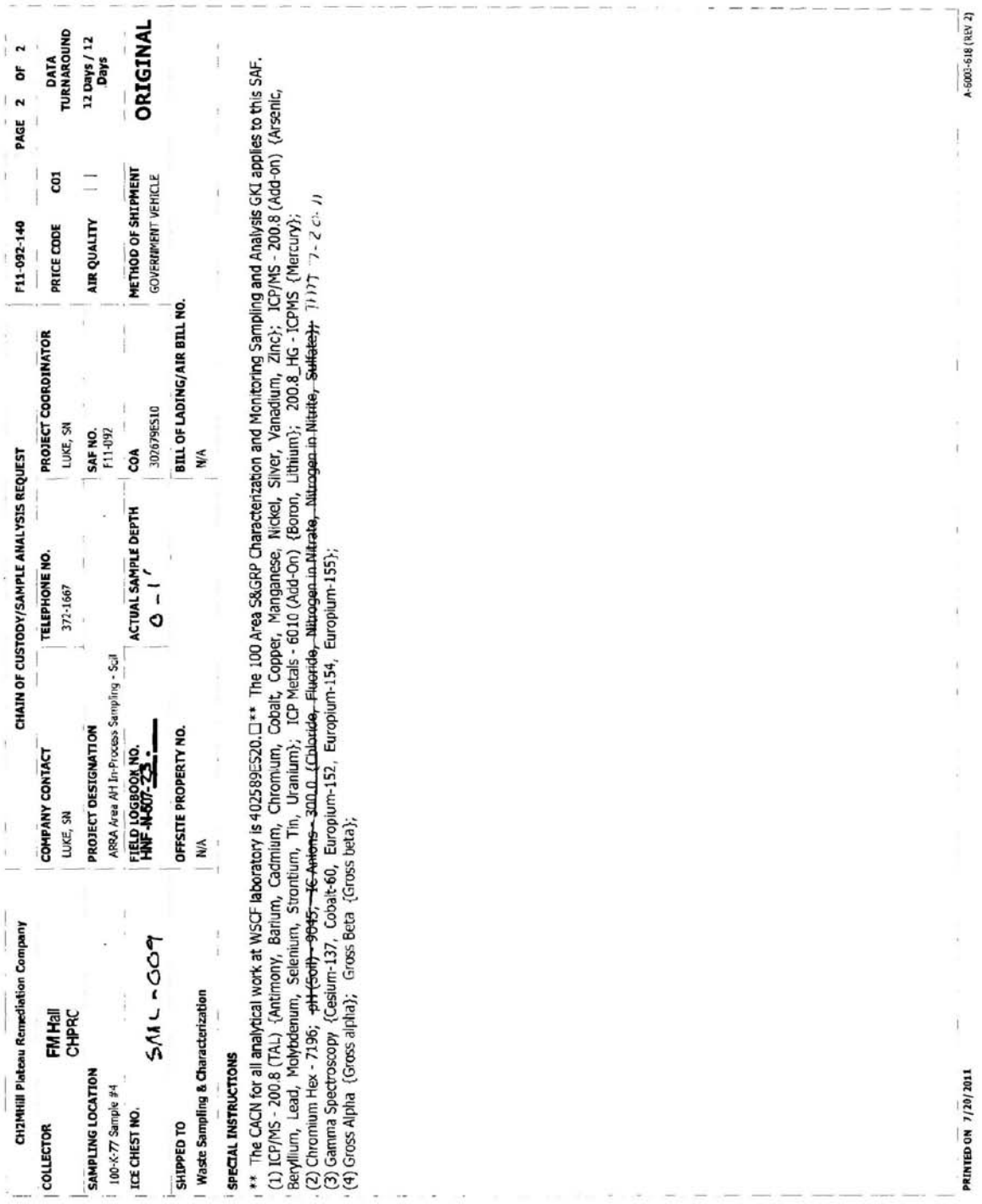
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-140 PAGE 2 OF 2

COLLECTOR: FM Hall, CHPRC
COMPANY CONTACT: LUKE, SN
TELEPHONE NO.: 372-1667
PROJECT COORDINATOR: LUKE, SN
PRICE CODE: C01
DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #4
PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil
SAF NO.: F11-092
AIR QUALITY:

ICE CHEST NO.: SAL-1509
FIELD LOGBOOK NO.: HNF-N-607-23
ACTUAL SAMPLE DEPTH: 0 - 1'
COA: 302679ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE
ORIGINAL

SHIPPED TO: Waste Sampling & Characterization
OFFSITE PROPERTY NO.: N/A
BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_Hg - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7199 7-2 ch 11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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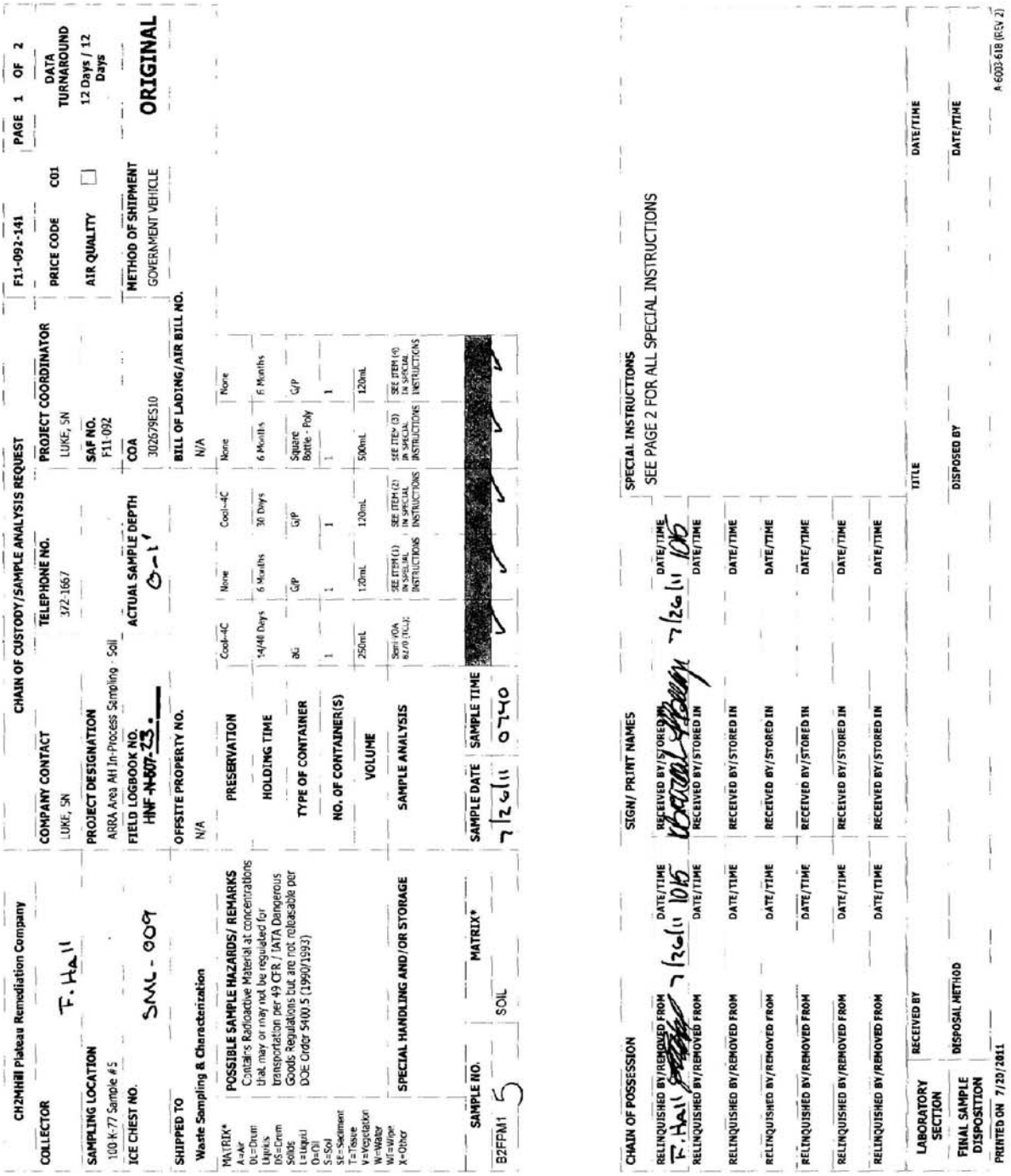

CH2MHill Plateau Remediation Company	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**		**F11-092-141**	**PAGE 1 OF 2**
COLLECTOR F. Hall	**COMPANY CONTACT** LUKE, SN	**TELEPHONE NO.** 372-1667	**PROJECT COORDINATOR** LUKE, SN	**PRICE CODE** C01
SAMPLING LOCATION 100-K-77 Sample #5	**PROJECT DESIGNATION** ARRA Area AH In-Process Sampling - Soil		**SAF NO.** F11-092	**AIR QUALITY** ☐
				DATA TURNAROUND 12 Days / 12 Days
ICE CHEST NO. SML-009	**FIELD LOGBOOK NO.** HNF-N-507-23	**ACTUAL SAMPLE DEPTH** 0-1'	**COA** 302679ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
				ORIGINAL
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	Cool~4C	None	None
HOLDING TIME	14/40 Days	6 Months	30 Days	6 Months	6 Months
TYPE OF CONTAINER	aG	G/P	G/P	Square Bottle - Poly	G/P
NO. OF CONTAINER(S)	1	1	1	1	1
VOLUME	250mL	120mL	120mL	500mL	120mL
SAMPLE ANALYSIS	Semi-VOA 8270 (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B2FPM1 5	SOIL	7/26/11	0740	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
F. Hall	7/26/11 1015		7/26/11 1015
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

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

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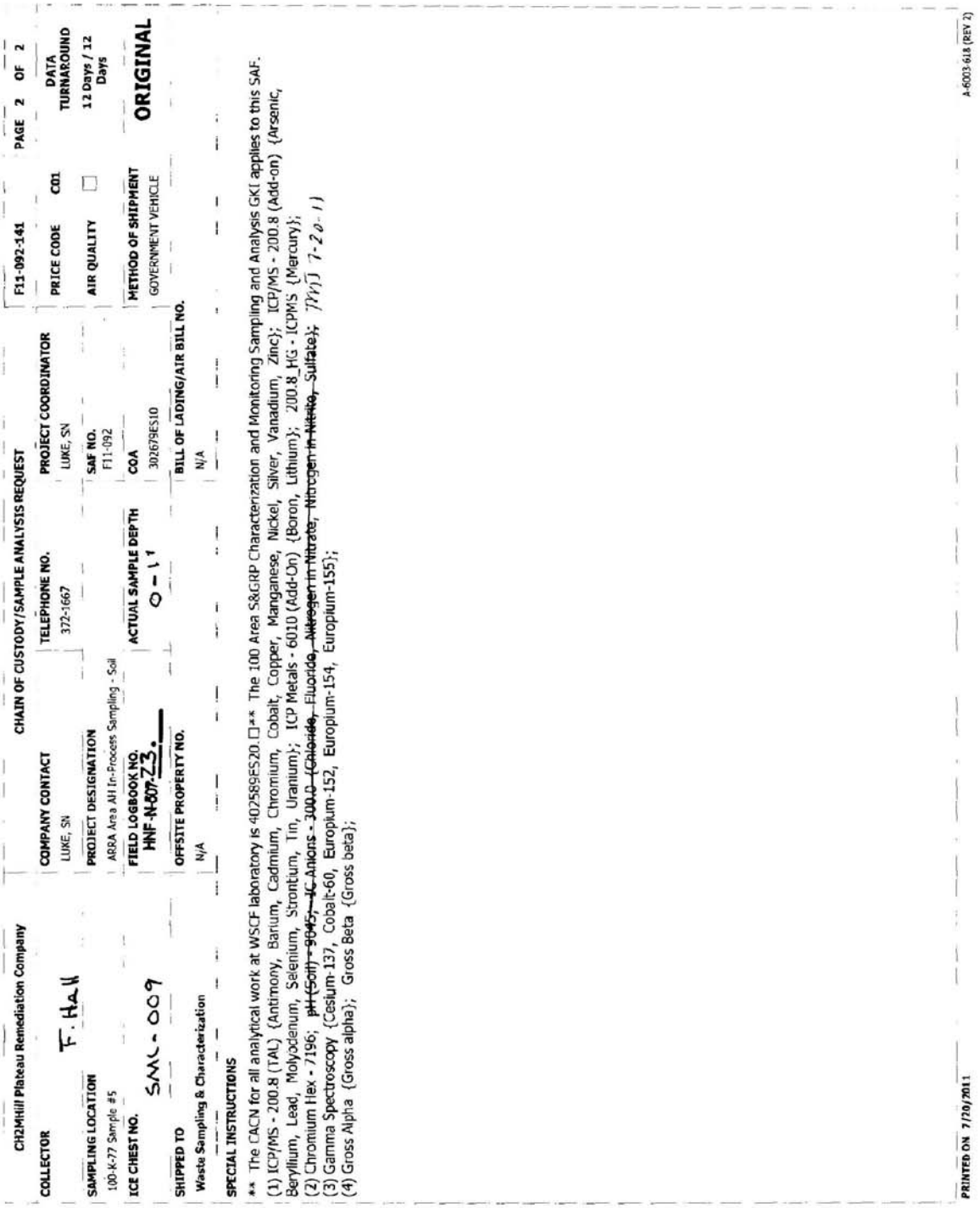
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-141

PAGE 2 OF 2

COLLECTOR: F. Hall

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100-K-77 Sample #5

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY: ☐

ICE CHEST NO.: SMC-009

FIELD LOGBOOK NO.: HNF-N-807-23.

ACTUAL SAMPLE DEPTH: 0 - 1'

COA: 302679ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20. ☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate);~~ 7196 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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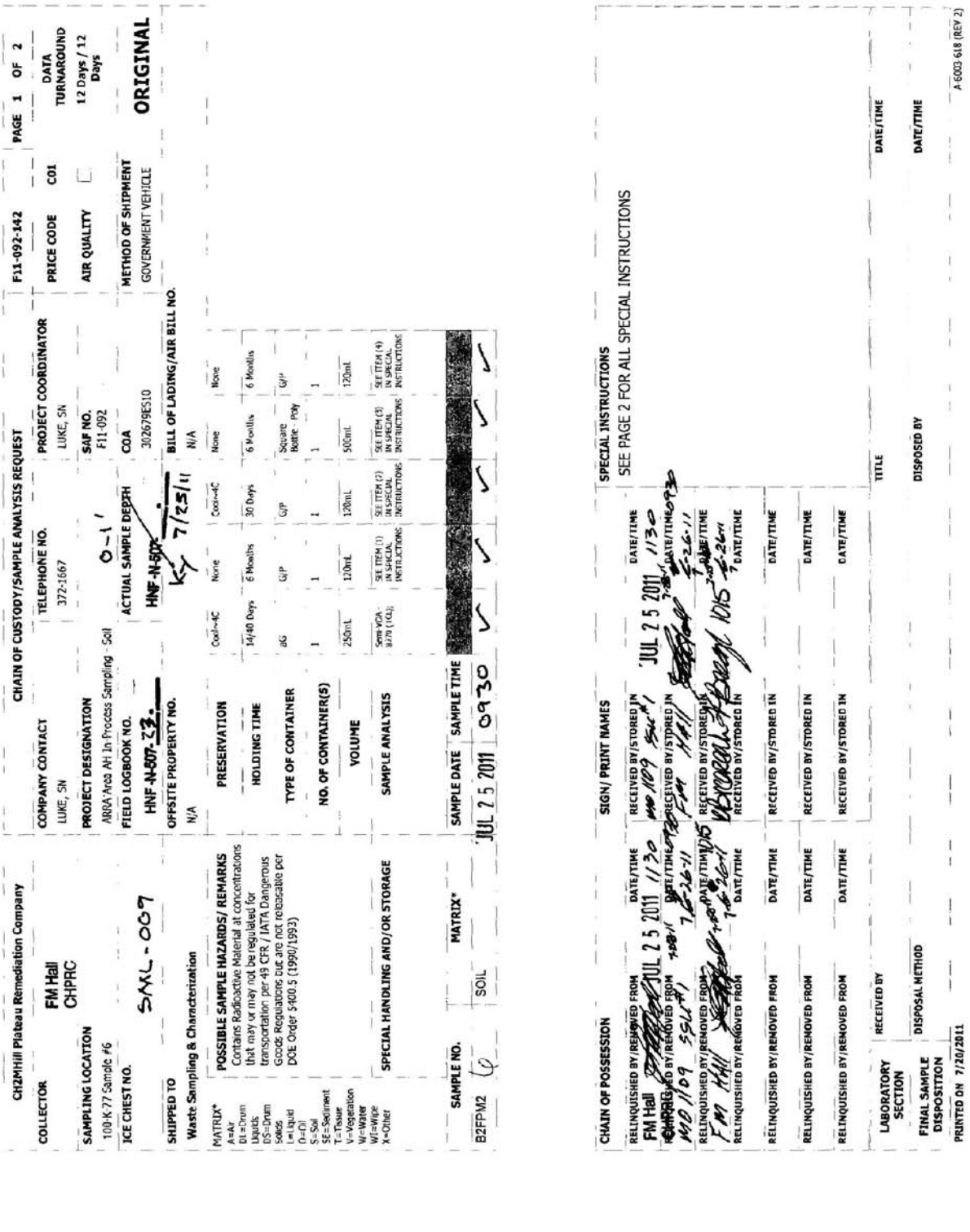
Sample Receipt

Chain of Custody



Friday, July 29, 2011 8:36:30 AM

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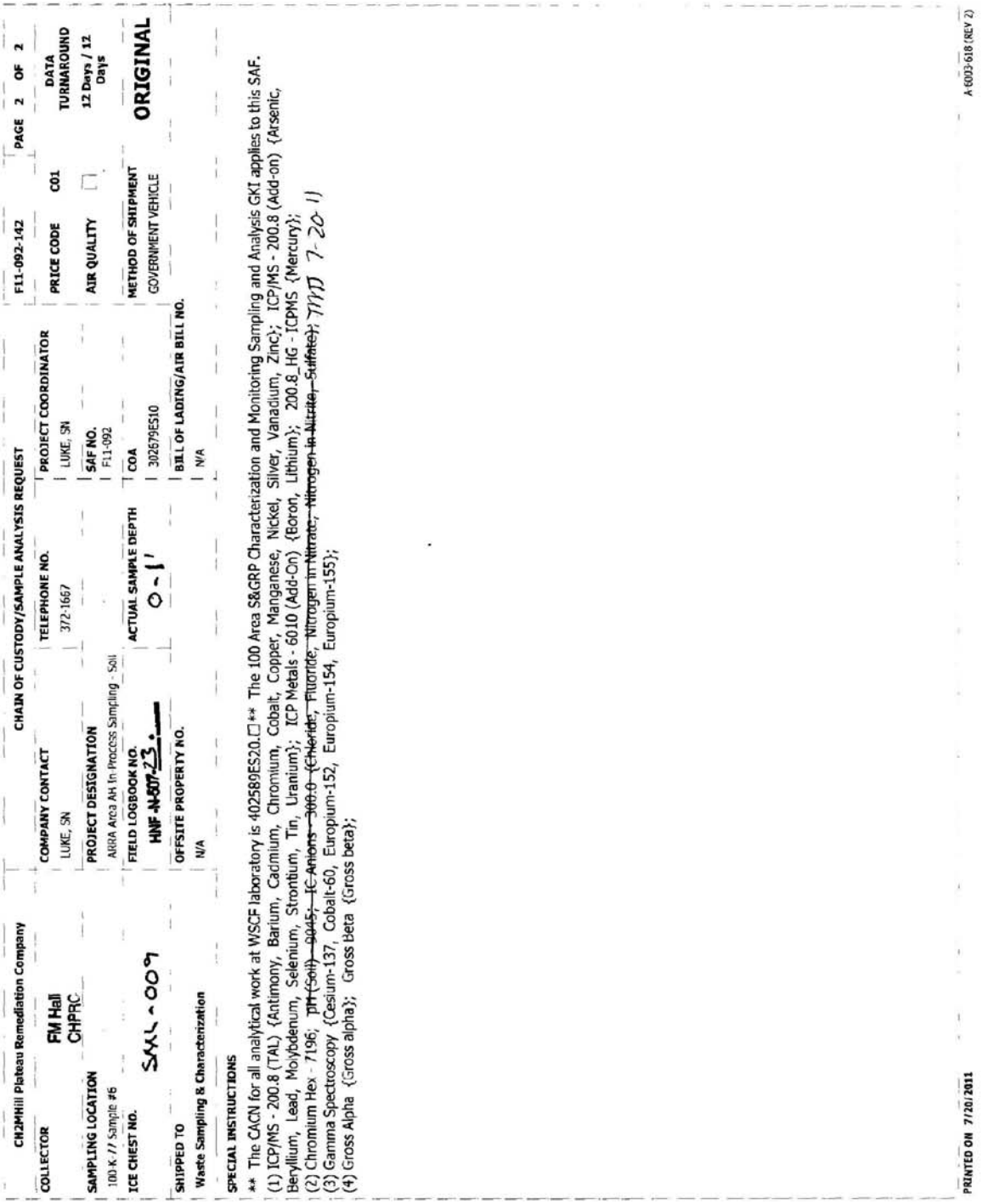
Sample Receipt

Chain of Custody



CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-092-142

PAGE 2 OF 2

COLLECTOR: FM Hall CHPRC

COMPANY CONTACT: LUKE, SN

TELEPHONE NO.: 372-1667

PROJECT COORDINATOR: LUKE, SN

PRICE CODE: C01

DATA TURNAROUND: 12 Days / 12 Days

SAMPLING LOCATION: 100 K // Sample #6

PROJECT DESIGNATION: ARRA Area AH In-Process Sampling - Soil

SAF NO.: F11-092

AIR QUALITY:

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

ORIGINAL

ICE CHEST NO.: SAL-0009

FIELD LOGBOOK NO.: HNF-N-807-23

ACTUAL SAMPLE DEPTH: 0-1'

COA: 3026795510

BILL OF LADING/AIR BILL NO.: N/A

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.: N/A

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402589ES20.☐** 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}; ICP Metals - 6010 (Add-On) {Boron, Lithium}; 200.8_HG - ICPMS {Mercury};
(2) Chromium Hex - 7196; ~~pH (Soil) - 9045; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate};~~ TTTJ 7-20-11
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
(4) Gross Alpha {Gross alpha}; Gross Beta {Gross beta};

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Appendix 5

Data Validation Supporting Documentation

Appendix B - Radiochemical Data Validation Checklist

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100K Area AH Waste Site 100-K-77			DATA PACKAGE: VSR11-054		
VALIDATOR: Carl Schloesslin		LAB: WSCF		DATE: 8-26-2011	
			SDG: WSCF112777		

ANALYSES PERFORMED					
Gross Alpha/Beta X	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy X	
Total Uranium	Radium-22	Tritium	C-14	I-129	

SAMPLES/MATRIX Soil samples

B2FPL7, B2FPL8, B2FPL9, B2FPM0, B2FPM1, B2FPM2

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)..... X 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) ..... X 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:
Field duplicates B2FPL8 & B2FPM1 Cs-137 RPD = 76%, RER = 2.7

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:
MDCs > CRDLs for associated non-detect sample results
Eu-152, Eu-154 and Eu-155 CRDLs = 1 pCi/g

B2FPL7 Eu-155 MDC = 0.12 pCi/g
B2FPL8 Eu-152 MDC = 0.13 pCi/g, Eu-154 MDC = 0.12 pCi/g, Eu-155 MDC = 0.18 pCi/g
B2FPL9 Eu-152 MDC = 0.12 pCi/g, Eu-154 MDC = 0.15 pCi/g, Eu-155 MDC = 0.17 pCi/g
B2FPM0 Eu-152 MDC = 0.15 pCi/g, Eu-154 MDC = 0.13 pCi/g, Eu-155 MDC = 0.23 pCi/g
B2FPM1 Eu-152 MDC = 0.11 pCi/g, Eu-154 MDC = 0.12 pCi/g, Eu-155 MDC = 0.17 pCi/g

Appendix 6

Additional Documentation Requested By Client

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

QC Batch 186835 **Test** Gamma Energy Analysis-general
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
IBLANK			**QC Sample #61388**								
Cesium-137	10045-97-3		-2.3E-3	pCi/g						U	07/26/11
Cobalt-60	10198-40-0		0.0060	pCi/g						U	07/26/11
Europium-152	14683-23-9		-9.3E-4	pCi/g						U	07/26/11
Europium-154	15585-10-1		6.5E-3	pCi/g						U	07/26/11
Europium-155	14391-16-3		-0.049	pCi/g						U	07/26/11
LCS			**QC Sample #61389**								
Cesium-137	10045-97-3		6400	pCi/sample	106	80 - 120					07/26/11
Cobalt-60	10198-40-0		10000	pCi/sample	102.9	80 - 120					07/26/11
DUP			**QC Sample #61390**								
			Original 112777001								
Cesium-137	10045-97-3	2.6E-3	0.034	pCi/g			171.30	30	*	X	07/26/11
Cobalt-60	10198-40-0	-0.014	-1.5E-3	pCi/g			-161.10	30	*	U	07/26/11
Europium-152	14683-23-9	-0.051	4.1E-3	pCi/g			-235.20	30	*	U	07/26/11
Europium-154	15585-10-1	-0.014	0.055	pCi/g			336.80	30	*	U	07/26/11
Europium-155	14391-16-3	0.021	0.038	pCi/g			59.30	30	*	U	07/26/11

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF112777

QC Batch 186836 **Test** Gross Alpha/Gross Beta
Associated Samples 112777001, 112777002, 112777003, 112777004, 112777005, 112777006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #61391**							
Gross Alpha	12587-46-1		-0.26	pCi/g					U	08/01/11
Gross Beta	12587-47-2		-0.12	pCi/g					U	08/01/11
LCS			**QC Sample #61392**							
Gross Alpha	12587-46-1		8.4	pCi/g	102.8	80 - 120				08/01/11
Gross Beta	12587-47-2		26	pCi/g	117.8	80 - 120				08/01/11
DUP			**QC Sample #61393**							
			Original 112777001							
Gross Alpha	12587-46-1	0.67	0.84	pCi/g			22.90	30	U	08/01/11
Gross Beta	12587-47-2	2.9	3.0	pCi/g			3.80	30		08/01/11