REVIEW COMMENT RECORD (RCR)	1. Date 06/05/2012	2. Review No.
	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: VSR12-014, Area AA Zone 1 Waste Site 1607-D3 Verification Samples, Project 100-K	Area AA Zone 1 Waste Site 1607-K3	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)	6/11/12 Date; Deanna L. Klages Reviewer/Point of Contact (print and sign); Deanna L. Klages Author/Originator (print and sign)	6/11/12 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	The cover sheet is titled "1607-D3" but needs to be changed to 1607-K3, which is our waste site.		Change the project title from 1607-D3 to 1607-K3	Y	corrected cover sheet	CLOSED

CHPRC - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
06/05/2012	
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
VSR12-014		Scot Fitzgerald	Analytical Support Group	2753/373-7495

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
Date: _____ Organization Manager (optional) (print and sign): _____	Scot Fitzgerald Reviewer/Point of Contact (print and sign) 06/05/2012 Date Author/Originator (print and sign)	Scot Fitzgerald Reviewer/Point of Contact (print and sign) 06/05/2012 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	No issues noted.					

CHPRC - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
6/3/12	RCR-VSR12-014
3. Project No. 100K	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
VSR12-014, Area AA zone 1 Waste Site 1607-D3 Verification Samples	SGRP	SL Huggins	SGRP QA	MO-2216E/A101 373-3630

17. Comment Submittal Approval	10. Agreement With Indicated Comment Disposition(s)	11. CLOSED
6/4/12 Date; S.L. Huggins Organization Manager (optional) (print and sign)	Date; Reviewer/Point of Contact (print and sign); Author/Originator (print and sign)	6/4/12 Date; S.L. Huggins Reviewer/Point of Contact (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	No issues noted.					

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

VSR12-014
Area AA zone 1 Waste Site 1607-K3 Verification Samples
Project 100K

Chemical & Radiochemical Validation - Level C

Validation Performed By: Eyda Hergenreder Eyda Hergenreder ***Date: 05-31-12***

Validation reviewed by: ***Date: 06-01-12***
Marcia Hilchey

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Date: 31 May 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: Semivolatile Organics - Sample Data Group (SDG) WSCF113124

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF113124 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
B2H760	9/08/11	Soil	C	8270C & WTPH-D
B2H761	9/08/11	Soil	C	8270C & WTPH-D
B2H7D2	9/08/11	Soil	C	8270C & WTPH-D
B2H7D3	9/08/11	Soil	C	8270C & WTPH-D

Data validation was conducted in accordance with the CHPRC validation statement of work and the Sampling and Analysis Plan for 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 and WTPH-D in soil 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 with the following exception. The diethyl phthalate result for equipment blank sample B2H7D3 was detect > the method detection limit but < the practical quantitation limit.

- **Accuracy**

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

Surrogates

All surrogate recoveries were acceptable with the following exceptions.

For method 8270C, surrogate terphenyl-d14 for sample B2H7D2 was below the lower acceptance limit but ≥20%. The class of reported sample results associated with the surrogate were non-detects and should be qualified as estimates and flagged "UJ." See the table in Appendix 2 for a listing of all affected sample results. It should be noted that per client request DV procedure HNF-20433, Rev 0 was used for target analyte association to the surrogate.

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

All MS/MSD recoveries were acceptable.

It should be noted that due to co-elution of analytes for diesel and kerosene analysis, samples were spiked for diesel only. No data should be qualified as a result.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%.

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.

- **Internal Standards**

Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during each analysis. Internal standards are added to all samples, including QC samples, prior to analysis.

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

- **Detection Limits**

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

All reported sample MDLs were below the CRDLs.

- **Completeness**

SDG WSCF113124 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 for sample B2H7D2 results as estimates were due to low surrogate recovery. 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.

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

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: WSCF113124	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
pyrene, acenaphthene, anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, benzo(b)fluoranthene, fluoranthene, benzo(k)fluoranthene, acenaphthylene, chrysene, benzo(a)pyrene, benzo(a)anthracene, phenanthrene, fluorene, naphthalene	UJ	B2H7D2	low surrogate recovery

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**09/13/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Pyrene	129-00-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chloroaniline	106-47-8	LA-523-456	U	<300		ug/kg	1	300	800	09/14/11

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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11

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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Diethyl phthalate	84-66-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11

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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
~~Diesel~~	~~TPHDIESEL~~	~~LA-523-493~~	~~U~~	~~<4~~		~~mg/kg~~	~~1~~	~~4~~	~~5~~	~~09/20/11~~

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

B - Analyte was detected in both the BLANK and SAMPLE
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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**09/13/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Pyrene	129-00-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chloroaniline	106-47-8	LA-523-456	U	<300		ug/kg	1	300	800	09/14/11

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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Diethyl phthalate	84-66-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
~~Diesel~~	~~TPHDIESEL~~	~~LA-523-493~~	~~U~~	~~<4~~		~~mg/kg~~	~~1~~	~~4~~	~~5~~	~~09/20/11~~

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method		RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep											**09/13/11**
SW-846 8270D											
4-Nitrophenol	100-02-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
1,4-Dichlorobenzene	106-46-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Phenol	108-95-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2,4-Dinitrotoluene	121-14-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Pyrene	129-00-0	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Acenaphthene	83-32-9	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
Pentachlorophenol	87-86-5	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2-Chlorophenol	95-57-8	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
4-Nitroaniline	100-01-6	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2,4-Dimethylphenol	105-67-9	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
4-Chloroaniline	106-47-8	LA-523-456		U	<300		ug/kg	1	300	800	09/14/11

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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Anthracene	120-12-7	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Benzo(b)fluoranthene	205-99-2	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Fluoranthene	206-44-0	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Benzo(k)fluoranthene	207-08-9	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Acenaphthylene	208-96-8	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11
Chrysene	218-01-9	LA-523-456 UJ	U	<200		ug/kg	1	200	800	09/14/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method		RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Benzo(a)pyrene	50-32-8	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
2,4-Dinitrophenol	51-28-5	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
1,3-Dichlorobenzene	541-73-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Benzo(a)anthracene	56-55-3	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
2,6-Dinitrotoluene	606-20-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Isophorone	78-59-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Diethyl phthalate	84-66-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Di-n-butylphthalate	84-74-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Phenanthrene	85-01-8	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
Butylbenzylphthalate	85-68-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Fluorene	86-73-7	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11

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WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	UJ	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456		U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids											**09/15/11**
TPHDWA											
~~Diesel~~	~~TPHDIESEL~~	~~LA-523-493~~		~~U~~	~~<4~~		~~mg/kg~~	~~1~~	~~4~~	~~5~~	~~09/20/11~~

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WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
8270 Prep										**09/13/11**
SW-846 8270D										
4-Nitrophenol	100-02-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Phenol	108-95-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Pyrene	129-00-0	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
n-Nitroso-di-n-propylamine	621-64-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Acenaphthene	83-32-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Pentachlorophenol	87-86-5	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Chlorophenol	95-57-8	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4-Nitroaniline	100-01-6	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4-Bromophenyl-phenylether	101-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4-Dimethylphenol	105-67-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4-Chloroaniline	106-47-8	LA-523-456	U	<300		ug/kg	1	300	800	09/15/11

MDL = Minimum Detection
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J - Analyte < lowest calibration but >= MDL.
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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/15/11
Bis-(2-Chloroethyl) ether	111-44-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Bis-(2-Chloroethoxy)methane	111-91-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Di-n-octylphthalate	117-84-0	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Hexachlorobenzene	118-74-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Anthracene	120-12-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4-Dichlorophenol	120-83-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Dimethylphthalate	131-11-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Dibenzofuran	132-64-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Benzo(g,h,i)perylene	191-24-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Indeno(1,2,3-cd)pyrene	193-39-5	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Benzo(b)fluoranthene	205-99-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Fluoranthene	206-44-0	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Benzo(k)fluoranthene	207-08-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Acenaphthylene	208-96-8	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Chrysene	218-01-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11

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

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/15/11
2,4-Dinitrophenol	51-28-5	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Dibenzo(a,h)anthracene	53-70-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4,6-Dinitro-2-methylphenol	534-52-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
1,3-Dichlorobenzene	541-73-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Benzo(a)anthracene	56-55-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,6-Dinitrotoluene	606-20-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
4-Chlorophenyl-phenylether	7005-72-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Hexachlorocyclopentadiene	77-47-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Isophorone	78-59-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Diethyl phthalate	84-66-2	LA-523-456	J	340		ug/kg	1	200	800	09/15/11
Di-n-butylphthalate	84-74-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Phenanthrene	85-01-8	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Butylbenzylphthalate	85-68-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
n-Nitrosodiphenylamine	86-30-6	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Fluorene	86-73-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/15/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
~~Diesel~~	~~TPHDIESEL~~	~~LA-523-493~~	~~U~~	~~<4~~		~~mg/kg~~	~~1~~	~~4~~	~~5~~	~~09/20/11~~

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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
Diesel	TPHDIESEL	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

MDL = Minimum Detection
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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124001
SAF# F11-096
Sample ID B2H760

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Kerosene	TPHKEROSEN	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
Diesel	TPHDIESEL	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

MDL = Minimum Detection
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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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124002
SAF# F11-096
Sample ID B2H761

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Kerosene	TPHKEROSEN	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/14/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/14/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
Diesel	TPHDIESEL	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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T - MS/MSD recovery outside control limits(GC/MS only).
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X,Y or Z - See comment detail and/or narrative.
PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124003
SAF# F11-096
Sample ID B2H7D2

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Kerosene	TPHKEROSEN	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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TP Err = Total Propagated
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PQL is equivalent to Estimated Quantitation Limit (EQL)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

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	09/15/11
Hexachlorobutadiene	87-68-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Nitroaniline	88-74-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Nitrophenol	88-75-5	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Naphthalene	91-20-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Methylnaphthalene	91-57-6	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Chloronaphthalene	91-58-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3,3-Dichlorobenzidine	91-94-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2-Methylphenol	95-48-7	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
1,2-Dichlorobenzene	95-50-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4,5-Trichlorophenol	95-95-4	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Nitrobenzene	98-95-3	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3-Nitroaniline	99-09-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
3 & 4 Methylphenol, Total	65794-96-9	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
Hexachloroethane	67-72-1	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
2,4,6-Trichlorophenol	88-06-2	LA-523-456	U	<200		ug/kg	1	200	800	09/15/11
TPHD Prep Solids										**09/15/11**
TPHDWA										
Diesel	TPHDIESEL	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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

B - Analyte was detected in both the BLANK and SAMPLE
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)

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Sample # 113124004
SAF# F11-096
Sample ID B2H7D3

Matrix SOIL
Sampled 09/08/11
Received 09/08/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Kerosene	TPHKEROSEN	LA-523-493	U	<4		mg/kg	1	4	5	09/20/11

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

B - Analyte was detected in both the BLANK and SAMPLE
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)

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Attachment 2
Narrative
WSCF113124

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.

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):

- B2H7D2 (113124003) did not meet the acceptance limits for surrogate Terphenyl-d14. Sample results were not flagged. The quality control report was flagged for surrogate recovery failure.

- All other applicable QC controls are within the established limits.

TPHD-WA – 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):

- Due to the co-elution of analytes for TPHD-WA (DRO) and kerosene analysis, samples are spiked and evaluated for TPHD only.
  - 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

F11-096-171 PAGE 1 OF 1

COLLECTOR
KC Patterson
CHPRC

COMPANY CONTACT
LUKE, SN

TELEPHONE NO.
372-1667

PROJECT COORDINATOR
LUKE, SN

PRICE CODE C01

DATA TURNAROUND
12 Days / 12 Days

SAMPLING LOCATION
Area AA Zone 1 Sample 23

PROJECT DESIGNATION
Area AA In-Process Sampling - Soil

SAF NO.
F11-096

AIR QUALITY ☐

ICE CHEST NO.

FIELD LOGBOOK NO.
HNF-N-507-24.

ACTUAL SAMPLE DEPTH
Surface

COA
302682ES10

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

113124

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS SVOA TPH-D	SEE ITEM (2) IN SPECIAL INSTRUCTIONS PCB

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2H760	SOIL	SEP 08 2011	0935

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	1250 SEP 08 2011	C Johnson	1250 SEP 08 2011

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS
** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
~~(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268}~~; 9-21-11

LABORATORY SECTION RECEIVED BY | TITLE | DATE/TIME

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

PRINTED ON 9/7/2011

A-G003-018 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-172

PAGE 1 OF 1

COLLECTOR
KC Patterson
CHPRC

COMPANY CONTACT
LUKE, SN

TELEPHONE NO.
372-1667

PROJECT COORDINATOR
LUKE, SN

PRICE CODE C01

DATA TURNAROUND
12 Days / 12 Days

SAMPLING LOCATION
Area AA Zone 1 Sample 24

PROJECT DESIGNATION
Area AA In-Process Sampling - Soil

SAF NO.
F11-096

AIR QUALITY ☐

ICE CHEST NO.

FIELD LOGBOOK NO.
HNF-N-507-24

ACTUAL SAMPLE DEPTH
Surface

COA
302682ES10

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	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B2H761	2 SOIL	SEP 08 2011	1010

Shipped to OFFSITE 9-21-11

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	1250 SEP 08 2011	C Johnson	1250 SEP 08 2011

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
~~(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};~~ 9-21-11

LABORATORY SECTION — RECEIVED BY — TITLE — DATE/TIME

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

Sample Receipt

Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-179

PAGE 1 OF 1

COLLECTOR
KC Patterson
CHPRC

COMPANY CONTACT
LUKE, SN

TELEPHONE NO.
372-1667

PROJECT COORDINATOR
LUKE, SN

PRICE CODE C01

DATA TURNAROUND
12 Days / 12 Days

SAMPLING LOCATION
Area AA Zone 1 Sample 33

PROJECT DESIGNATION
Area AA In-Process Sampling - Soil

SAF NO.
F11-096

AIR QUALITY ☐

ICE CHEST NO.

FIELD LOGBOOK NO.
HNF-N-507-24

ACTUAL SAMPLE DEPTH
Surface

COA
302682ES10

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	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	[redacted]	
B2H7D2	3 SOIL	SEP 08 2011	1010	✓	✓

Shipped offsite to 5-2-11

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	1250 SEP 08 2011	C Johnson	1250 SEP 08 2011

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
~~(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};~~ N 5-2-11

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F11-096-181 — PAGE 1 OF 1

COLLECTOR: Kevin Patterson /CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
SAMPLING LOCATION: Area AA Zone 1 Sample 34	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil		SAF NO.: F11-096
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507 24	ACTUAL SAMPLE DEPTH: N/A	COA: 302682ES10
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A

PRICE CODE: 8C
AIR QUALITY: ☐
METHOD OF SHIPMENT: GOVERNMENT VEHICLE
DATA TURNAROUND: 15 Days / 15 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	Cool<4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	[redacted]		
B2H7D3	4 SOIL	9/8/11	0840	✓	✓	✓

Shared DEFSITE

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K. Patterson-CHPRC	9/8/11 1050	C Johnson	9/8/11 1050
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

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
~~(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};~~ 9-21-11

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

PRINTED ON 9/7/2011 — A-6003-618 (REV 2)

Appendix 5

Data Validation Supporting Documentation

Appendix A - Chemical Data Validation Checklist

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-014		
VALIDATOR: Eyda Hergenreder		LAB: WSCF		DATE: 05-31-2012	
			SDG: WSCF113124		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270 X		SW-846 8270 (TCLP)

SAMPLES/MATRIX Soil samples

B2H760, B2H761, B2H7D2, B2H7D3

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:

EB sample B2H7D3 diethyl phthalate 340 ug/kg

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:

Surrogate terphenyl-d14 for sample B2H7D2 was 34.6%

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

More

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-014		
VALIDATOR: Eyda Hergenreder		LAB: WSCF		DATE: 05-31-2012	
			SDG: WSCF113124		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D X	

SAMPLES/MATRIX: Soil samples

B2H760, B2H761, B2H7D2, B2H7D3

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)

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 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. COMPOUND IDENTIFICATION, 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

8. 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

Check materials traceable?..... Yes No N/A

Check 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:

More

Appendix 6

Additional Documentation Requested By Client

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

QC Batch 189585
Associated Samples 113124001, 113124002, 113124003, 113124004

Test SW-846 8270D Semivolatiles

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #64822**							
4-Nitrophenol	100-02-7		<200	ug/kg					U	09/14/11
1,4-Dichlorobenzene	106-46-7		<200	ug/kg					U	09/14/11
Phenol	108-95-2		<200	ug/kg					U	09/14/11
1,2,4-Trichlorobenzene	120-82-1		<200	ug/kg					U	09/14/11
2,4-Dinitrotoluene	121-14-2		<200	ug/kg					U	09/14/11
Pyrene	129-00-0		<200	ug/kg					U	09/14/11
4-Chloro-3-methylphenol	59-50-7		<200	ug/kg					U	09/14/11
n-Nitroso-di-n-propylamine	621-64-7		<200	ug/kg					U	09/14/11
Acenaphthene	83-32-9		<200	ug/kg					U	09/14/11
Pentachlorophenol	87-86-5		<200	ug/kg					U	09/14/11
2-Chlorophenol	95-57-8		<200	ug/kg					U	09/14/11
4-Nitroaniline	100-01-6		<200	ug/kg					U	09/14/11
4-Bromophenyl-phenylether	101-55-3		<200	ug/kg					U	09/14/11
2,4-Dimethylphenol	105-67-9		<200	ug/kg					U	09/14/11
4-Chloroaniline	106-47-8		<300	ug/kg					U	09/14/11
Bis(1-Chloro-2-propyl)ether	108-60-1		<200	ug/kg					U	09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

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	09/14/11
Bis-(2-Chloroethoxy)methane	111-91-1		<200	ug/kg					U	09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7		<200	ug/kg					U	09/14/11
Di-n-octylphthalate	117-84-0		<200	ug/kg					U	09/14/11
Hexachlorobenzene	118-74-1		<200	ug/kg					U	09/14/11
Anthracene	120-12-7		<200	ug/kg					U	09/14/11
2,4-Dichlorophenol	120-83-2		<200	ug/kg					U	09/14/11
Dimethylphthalate	131-11-3		<200	ug/kg					U	09/14/11
Dibenzofuran	132-64-9		<200	ug/kg					U	09/14/11
Benzo(g,h,i)perylene	191-24-2		<200	ug/kg					U	09/14/11
Indeno(1,2,3-cd)pyrene	193-39-5		<200	ug/kg					U	09/14/11
Benzo(b)fluoranthene	205-99-2		<200	ug/kg					U	09/14/11
Fluoranthene	206-44-0		<200	ug/kg					U	09/14/11
Benzo(k)fluoranthene	207-08-9		<200	ug/kg					U	09/14/11
Acenaphthylene	208-96-8		<200	ug/kg					U	09/14/11
Chrysene	218-01-9		<200	ug/kg					U	09/14/11
Benzo(a)pyrene	50-32-8		<200	ug/kg					U	09/14/11
2,4-Dinitrophenol	51-28-5		<200	ug/kg					U	09/14/11
Dibenzo(a,h)anthracene	53-70-3		<200	ug/kg					U	09/14/11
4,6-Dinitro-2-methylphenol	534-52-1		<200	ug/kg					U	09/14/11
1,3-Dichlorobenzene	541-73-1		<200	ug/kg					U	09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Benzo(a)anthracene	56-55-3		<200	ug/kg					U	09/14/11
2,6-Dinitrotoluene	606-20-2		<200	ug/kg					U	09/14/11
4-Chlorophenyl-phenylether	7005-72-3		<200	ug/kg					U	09/14/11
Hexachlorocyclopentadiene	77-47-4		<200	ug/kg					U	09/14/11
Isophorone	78-59-1		<200	ug/kg					U	09/14/11
Diethyl phthalate	84-66-2		<200	ug/kg					U	09/14/11
Di-n-butylphthalate	84-74-2		<200	ug/kg					U	09/14/11
Phenanthrene	85-01-8		<200	ug/kg					U	09/14/11
Butylbenzylphthalate	85-68-7		<200	ug/kg					U	09/14/11
n-Nitrosodiphenylamine	86-30-6		<200	ug/kg					U	09/14/11
Fluorene	86-73-7		<200	ug/kg					U	09/14/11
Carbazole	86-74-8		<200	ug/kg					U	09/14/11
Hexachlorobutadiene	87-68-3		<200	ug/kg					U	09/14/11
2-Nitroaniline	88-74-4		<200	ug/kg					U	09/14/11
2-Nitrophenol	88-75-5		<200	ug/kg					U	09/14/11
Naphthalene	91-20-3		<200	ug/kg					U	09/14/11
2-Methylnaphthalene	91-57-6		<200	ug/kg					U	09/14/11
2-Chloronaphthalene	91-58-7		<200	ug/kg					U	09/14/11
3,3-Dichlorobenzidine	91-94-1		<200	ug/kg					U	09/14/11
2-Methylphenol	95-48-7		<200	ug/kg					U	09/14/11
1,2-Dichlorobenzene	95-50-1		<200	ug/kg					U	09/14/11
2,4,5-Trichlorophenol	95-95-4		<200	ug/kg					U	09/14/11
Nitrobenzene	98-95-3		<200	ug/kg					U	09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
3-Nitroaniline	99-09-2		<200	ug/kg					U	09/14/11
3 & 4 Methylphenol, Total	65794-96-9		<200	ug/kg					U	09/14/11
Hexachloroethane	67-72-1		<200	ug/kg					U	09/14/11
2,4,6-Trichlorophenol	88-06-2		<200	ug/kg					U	09/14/11
LCS			**QC Sample #64823**							
4-Nitrophenol	100-02-7		5400	ug/kg	89.7	49 - 128				09/14/11
1,4-Dichlorobenzene	106-46-7		4100	ug/kg	103.7	71 - 122				09/14/11
Phenol	108-95-2		6300	ug/kg	105	72 - 123				09/14/11
1,2,4-Trichlorobenzene	120-82-1		5700	ug/kg	95.8	73 - 127				09/14/11
2,4-Dinitrotoluene	121-14-2		5800	ug/kg	96.4	68 - 121				09/14/11
Pyrene	129-00-0		6000	ug/kg	99.4	75 - 137				09/14/11
4-Chloro-3-methylphenol	59-50-7		6300	ug/kg	104.6	69 - 127				09/14/11
n-Nitroso-di-n-propylamine	621-64-7		6100	ug/kg	102.5	73 - 125				09/14/11
Acenaphthene	83-32-9		6000	ug/kg	100.4	73 - 122				09/14/11
Pentachlorophenol	87-86-5		5300	ug/kg	88.1	42 - 132				09/14/11
2-Chlorophenol	95-57-8		6200	ug/kg	103.3	71 - 123				09/14/11
2-Methylphenol	95-48-7		6400	ug/kg	106.4	50 - 140				09/14/11
Hexachloroethane	67-72-1		5700	ug/kg	95.3	50 - 140				09/14/11
2-Nitrophenol	88-75-5		6000	ug/kg	100.2	50 - 140				09/14/11
2,4-Dimethylphenol	105-67-9		6500	ug/kg	108.5	50 - 140				09/14/11
2,4-Dichlorophenol	120-83-2		5800	ug/kg	96.1	50 - 140				09/14/11
Naphthalene	91-20-3		6000	ug/kg	100.8	50 - 140				09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
2-Nitroaniline	88-74-4		6100	ug/kg	100.9	50 - 140				09/14/11
Dibenzofuran	132-64-9		6100	ug/kg	100.9	50 - 140				09/14/11
Fluorene	86-73-7		6100	ug/kg	101.2	50 - 140				09/14/11
Hexachlorobenzene	118-74-1		6000	ug/kg	100.1	50 - 140				09/14/11
Anthracene	120-12-7		6200	ug/kg	103.4	50 - 140				09/14/11
Carbazole	86-74-8		6000	ug/kg	78.8	50 - 140				09/14/11
Di-n-butylphthalate	84-74-2		6100	ug/kg	101.1	50 - 140				09/14/11
3,3-Dichlorobenzidine	91-94-1		5400	ug/kg	90.3	50 - 140				09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7		6200	ug/kg	103.7	50 - 140				09/14/11
Di-n-octylphthalate	117-84-0		6200	ug/kg	102.9	50 - 140				09/14/11
Benzo(a)pyrene	50-32-8		6300	ug/kg	105.1	50 - 140				09/14/11
Bis(1-Chloro-2-propyl)ether	108-60-1		6400	ug/kg	106.2	50 - 140				09/14/11
4-Chloroaniline	106-47-8		5000	ug/kg	65.9	50 - 140				09/14/11
MS			**QC Sample #64824**							
			Original 113124002							
4-Nitrophenol	100-02-7	<200	4200	ug/kg	70.9	53 - 130				09/14/11
1,4-Dichlorobenzene	106-46-7	<200	3800	ug/kg	97.8	75 - 117				09/14/11
Phenol	108-95-2	<200	5600	ug/kg	95.1	76 - 123				09/14/11
1,2,4-Trichlorobenzene	120-82-1	<200	5200	ug/kg	88.9	76 - 125				09/14/11
2,4-Dinitrotoluene	121-14-2	<200	5200	ug/kg	88.5	73 - 120				09/14/11
Pyrene	129-00-0	<200	5600	ug/kg	95.9	78 - 134				09/14/11
4-Chloro-3-methylphenol	59-50-7	<200	5500	ug/kg	93	71 - 129				09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
n-Nitroso-di-n-propylamine	621-64-7	<200	5800	ug/kg	98.6	75 - 124				09/14/11
Acenaphthene	83-32-9	<200	5500	ug/kg	93.8	75 - 121				09/14/11
Pentachlorophenol	87-86-5	<200	3400	ug/kg	57.7	39 - 140				09/14/11
2-Chlorophenol	95-57-8	<200	5600	ug/kg	95.1	75 - 123				09/14/11
2-Methylphenol	95-48-7	<200	5400	ug/kg	91.5	50 - 140				09/14/11
Hexachloroethane	67-72-1	<200	5400	ug/kg	91.9	50 - 140				09/14/11
2-Nitrophenol	88-75-5	<200	5400	ug/kg	92.2	50 - 140				09/14/11
2,4-Dimethylphenol	105-67-9	<200	4300	ug/kg	73	50 - 140				09/14/11
2,4-Dichlorophenol	120-83-2	<200	5100	ug/kg	86.7	50 - 140				09/14/11
Naphthalene	91-20-3	<200	5500	ug/kg	93.6	50 - 140				09/14/11
2-Nitroaniline	88-74-4	<200	5500	ug/kg	93.8	50 - 140				09/14/11
Dibenzofuran	132-64-9	<200	5500	ug/kg	94.1	50 - 140				09/14/11
Fluorene	86-73-7	<200	5500	ug/kg	94.3	50 - 140				09/14/11
Hexachlorobenzene	118-74-1	<200	5500	ug/kg	94.2	50 - 140				09/14/11
Anthracene	120-12-7	<200	5700	ug/kg	96.1	50 - 140				09/14/11
Carbazole	86-74-8	<200	5400	ug/kg	72.2	50 - 140				09/14/11
Di-n-butylphthalate	84-74-2	<200	5500	ug/kg	93.6	50 - 140				09/14/11
3,3-Dichlorobenzidine	91-94-1	<200	4800	ug/kg	81.1	50 - 140				09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	<200	5800	ug/kg	98.4	50 - 140				09/14/11
Di-n-octylphthalate	117-84-0	<200	5500	ug/kg	94.3	50 - 140				09/14/11
Benzo(a)pyrene	50-32-8	<200	5700	ug/kg	96.3	50 - 140				09/14/11
Bis(1-Chloro-2-propyl)ether	108-60-1	<200	6000	ug/kg	101.5	50 - 140				09/14/11
4-Chloroaniline	106-47-8	<300	5200	ug/kg	70	50 - 140				09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MSD			**QC Sample #64825**							
			Original 113124002						**Paired 64824**	
4-Nitrophenol	100-02-7	<200	4700	ug/kg	78.3	53 - 130	9.90	30		09/14/11
1,4-Dichlorobenzene	106-46-7	<200	3900	ug/kg	97.3	75 - 117	0.50	30		09/14/11
Phenol	108-95-2	<200	5700	ug/kg	96.3	76 - 123	1.30	30		09/14/11
1,2,4-Trichlorobenzene	120-82-1	<200	5400	ug/kg	90	76 - 125	1.20	30		09/14/11
2,4-Dinitrotoluene	121-14-2	<200	5400	ug/kg	89.8	73 - 120	1.50	30		09/14/11
Pyrene	129-00-0	<200	5600	ug/kg	94.4	78 - 134	1.60	30		09/14/11
4-Chloro-3-methylphenol	59-50-7	<200	5800	ug/kg	98.1	71 - 129	5.30	30		09/14/11
n-Nitroso-di-n-propylamine	621-64-7	<200	5900	ug/kg	99.8	75 - 124	1.20	30		09/14/11
Acenaphthene	83-32-9	<200	5700	ug/kg	96.2	75 - 121	2.50	30		09/14/11
Pentachlorophenol	87-86-5	<200	4100	ug/kg	68.6	39 - 140	17.30	30		09/14/11
2-Chlorophenol	95-57-8	<200	5700	ug/kg	95.4	75 - 123	0.30	30		09/14/11
2-Methylphenol	95-48-7	<200	5400	ug/kg	90.6	50 - 140	1.00	30		09/14/11
Hexachloroethane	67-72-1	<200	5500	ug/kg	92.8	50 - 140	1.00	30		09/14/11
2-Nitrophenol	88-75-5	<200	5500	ug/kg	92.8	50 - 140	0.60	30		09/14/11
2,4-Dimethylphenol	105-67-9	<200	4400	ug/kg	73.1	50 - 140	0.10	30		09/14/11
2,4-Dichlorophenol	120-83-2	<200	5300	ug/kg	88.3	50 - 140	1.80	30		09/14/11
Naphthalene	91-20-3	<200	5700	ug/kg	95	50 - 140	1.50	30		09/14/11
2-Nitroaniline	88-74-4	<200	5800	ug/kg	97.2	50 - 140	3.60	30		09/14/11
Dibenzofuran	132-64-9	<200	5600	ug/kg	94.5	50 - 140	0.40	30		09/14/11
Fluorene	86-73-7	<200	5700	ug/kg	96.5	50 - 140	2.30	30		09/14/11
Hexachlorobenzene	118-74-1	<200	5600	ug/kg	93.2	50 - 140	1.10	30		09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Anthracene	120-12-7	<200	5800	ug/kg	97.2	50 - 140	1.10	30		09/14/11
Carbazole	86-74-8	<200	5500	ug/kg	72.7	50 - 140	0.70	30		09/14/11
Di-n-butylphthalate	84-74-2	<200	5500	ug/kg	92.5	50 - 140	1.20	30		09/14/11
3,3-Dichlorobenzidine	91-94-1	<200	4800	ug/kg	81.1	50 - 140	0.00	30		09/14/11
Bis-(2-Ethylhexyl)phthalate	117-81-7	<200	5700	ug/kg	95.9	50 - 140	2.60	30		09/14/11
Di-n-octylphthalate	117-84-0	<200	5200	ug/kg	87.7	50 - 140	7.30	30		09/14/11
Benzo(a)pyrene	50-32-8	<200	5500	ug/kg	92.2	50 - 140	4.40	30		09/14/11
Bis(1-Chloro-2-propyl)ether	108-60-1	<200	6100	ug/kg	102.3	50 - 140	0.80	30		09/14/11
4-Chloroaniline	106-47-8	<300	5300	ug/kg	69.6	50 - 140	0.60	30		09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

QC Batch 189585
Associated Samples 113124001, 113124002, 113124003, 113124004

Test SW-846 8270D Semivolatiles

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #113124001**							
2-Fluorophenol	367-12-4				105.7	44 - 135				09/14/11
Phenol-d5	4165-62-2				105.6	41 - 136				09/14/11
Nitrobenzene-d5	4165-60-0				107.6	53 - 129				09/14/11
2-Fluorobiphenyl	321-60-8				102.2	36 - 141				09/14/11
2,4,6-Tribromophenol	118-79-6				88.7	17 - 142				09/14/11
Terphenyl-d14	98904-43-9				97.5	61 - 142				09/14/11
SAMPLE			**Sample #113124002**							
2-Fluorophenol	367-12-4				106.6	44 - 135				09/14/11
Phenol-d5	4165-62-2				108.8	41 - 136				09/14/11
Nitrobenzene-d5	4165-60-0				111.7	53 - 129				09/14/11
2-Fluorobiphenyl	321-60-8				107.4	36 - 141				09/14/11
2,4,6-Tribromophenol	118-79-6				91.3	17 - 142				09/14/11
Terphenyl-d14	98904-43-9				109.6	61 - 142				09/14/11
SAMPLE			**Sample #113124003**							
2-Fluorophenol	367-12-4				97.2	44 - 135				09/14/11
Phenol-d5	4165-62-2				94.6	41 - 136				09/14/11
Nitrobenzene-d5	4165-60-0				101.2	53 - 129				09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
2-Fluorobiphenyl	321-60-8				93.8	36 - 141				09/14/11
2,4,6-Tribromophenol	118-79-6				80.3	17 - 142				09/14/11
Terphenyl-d14	98904-43-9				34.6	61 - 142			X	09/14/11
SAMPLE			**Sample #113124004**							
2-Fluorophenol	367-12-4				113.3	44 - 135				09/15/11
Phenol-d5	4165-62-2				112.5	41 - 136				09/15/11
Nitrobenzene-d5	4165-60-0				116	53 - 129				09/15/11
2-Fluorobiphenyl	321-60-8				106.5	36 - 141				09/15/11
2,4,6-Tribromophenol	118-79-6				89.2	17 - 142				09/15/11
Terphenyl-d14	98904-43-9				115.2	61 - 142				09/15/11
BLANK			**QC Sample #64822**							
2-Fluorophenol	367-12-4				113.5	44 - 135				09/14/11
Phenol-d5	4165-62-2				113.3	41 - 136				09/14/11
Nitrobenzene-d5	4165-60-0				115.6	53 - 129				09/14/11
2-Fluorobiphenyl	321-60-8				113.2	36 - 141				09/14/11
2,4,6-Tribromophenol	118-79-6				98.5	17 - 142				09/14/11
Terphenyl-d14	98904-43-9				98.5	61 - 142				09/14/11
LCS			**QC Sample #64823**							
2-Fluorophenol	367-12-4				108.9	19 - 140				09/14/11
Phenol-d5	4165-62-2				111.6	32 - 134				09/14/11
Nitrobenzene-d5	4165-60-0				110	60 - 122				09/14/11
2-Fluorobiphenyl	321-60-8				105.9	57 - 122				09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
2,4,6-Tribromophenol	118-79-6				99.5	34 - 139				09/14/11
Terphenyl-d14	98904-43-9				105.2	49 - 147				09/14/11
MS			**QC Sample #64824**							
			Original	**113124002**						
2-Fluorophenol	367-12-4				103.7	44 - 135				09/14/11
Phenol-d5	4165-62-2				105.6	41 - 136				09/14/11
Nitrobenzene-d5	4165-60-0				106.6	53 - 129				09/14/11
2-Fluorobiphenyl	321-60-8				103	36 - 141				09/14/11
2,4,6-Tribromophenol	118-79-6				93.4	17 - 142				09/14/11
Terphenyl-d14	98904-43-9				104.6	61 - 142				09/14/11
MSD			**QC Sample #64825**							
			Original	**113124002**				**Paired**	**64824**	
2-Fluorophenol	367-12-4				103	44 - 135	n/a			09/14/11
Phenol-d5	4165-62-2				105.9	41 - 136	n/a			09/14/11
Nitrobenzene-d5	4165-60-0				107.6	53 - 129	n/a			09/14/11
2-Fluorobiphenyl	321-60-8				101.4	36 - 141	n/a			09/14/11
2,4,6-Tribromophenol	118-79-6				94.6	17 - 142	n/a			09/14/11
Terphenyl-d14	98904-43-9				99	61 - 142	n/a			09/14/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

QC Batch 189648
Associated Samples 113124001, 113124002, 113124003, 113124004

Test Extractable Diesel and Petroleum

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #64912**							
Diesel	TPHDIESEL		<4	mg/kg					U	09/20/11
Kerosene	TPHKEROSE		<4	mg/kg					U	09/20/11
LCS			**QC Sample #64913**							
Diesel	TPHDIESEL		98	mg/kg	98.4	70 - 130				09/20/11
MS			**QC Sample #64914**							
			Original 113124001							
Diesel	TPHDIESEL	<4	110	mg/kg	113.8	70 - 130				09/20/11
MSD			**QC Sample #64915**							
			Original 113124001					**Paired**	**64914**	
Diesel	TPHDIESEL	<4	110	mg/kg	108.8	70 - 130	4.50	30		09/20/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

QC Batch 189648
Associated Samples 113124001, 113124002, 113124003, 113124004

Test Extractable Diesel and Petroleum

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #113124001**							
o-Terphenyl	84-15-1				84.5	70 - 130				09/20/11
SAMPLE			**Sample #113124002**							
o-Terphenyl	84-15-1				81.2	70 - 130				09/20/11
SAMPLE			**Sample #113124003**							
o-Terphenyl	84-15-1				85.1	70 - 130				09/20/11
SAMPLE			**Sample #113124004**							
o-Terphenyl	84-15-1				82	70 - 130				09/20/11
BLANK			**QC Sample #64912**							
o-Terphenyl	84-15-1				76	70 - 130				09/20/11
LCS			**QC Sample #64913**							
o-Terphenyl	84-15-1				82	50 - 150				09/20/11
MS			**QC Sample #64914**							
			Original 113124001							
o-Terphenyl	84-15-1				96.8	50 - 150				09/20/11

Quality Control Report

Attention Scot Fitzgerald
Department Organic, Semivolatiles

Group # WSCF113124

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MSD			**QC Sample #64915**							
			Original	**113124001**				**Paired**	**64914**	
o-Terphenyl	84-15-1				94.1	50 - 150	n/a			09/20/11

Date: 31 May 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: Pesticides and Herbicides - Sample Data Groups (SDG) SL1120

INTRODUCTION

This memorandum presents the results of data validation for SDG SL1120 prepared by TestAmerica Laboratories, Inc. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Method
B2H763	9/08/11	Soil	C	8081A & 8151A
B2H7D4	9/08/11	Soil	C	8081A & 8151A
B2H7D5	9/08/11	Soil	C	8081A & 8151A
B2H762	9/08/11	Soil	C	8081A & 8151A

Data validation was conducted in accordance with the CHPRC validation statement of work and the Sampling and Analysis Plan for 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 pesticides and herbicides 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 matrix spike and laboratory control sample accuracy limits are 50% to 150%.

Surrogates

All surrogate recoveries were acceptable.

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

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

The MS and MSD recoveries for heptachlor were above the upper acceptance limits. All associated sample results were non-detects and should not be qualified.

The MS and MSD recoveries for dinoseb were below the lower acceptance limit but ≥20%. All associated sample results were non-detects and should be qualified as estimates and flagged "UJ."

It should be mentioned that MS/MSD analyses were not performed for the multi-component analyte toxaphene. No sample data are qualified as a result.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

It should be mentioned that LCS analyses was not performed for the multi-component analyte toxaphene. No sample data are qualified as a result.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30.

MS/MSD Samples

All MS/MSD relative percent difference values were acceptable with the following exception.

The MS/MSD RPD for 4,4′-DDD and dinoseb were above the acceptance limit. All associated sample results were non-detects and should be qualified as estimates and flagged "UJ."

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 SL1128 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 all dinoseb results were due to low MS/MSD recoveries and poor MS/MSD precision and for all 4,4′-DDD results due to poor MS/MSD precision.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

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

- **C** — This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).

- **X** — This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful. The data should be considered unusable for decision-making purposes.

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

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

Appendix 2

Summary of Data Qualification

Pesticide & Herbicide Data Qualification Summary			
SDGs: SL1120	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
Dinoseb	UJ	B2H763, B2H7D4, B2H7D5, B2H762	Low MS/MSD recoveries and poor MS/MSD precision
4,4′-DDD	UJ	B2H763, B2H7D4, B2H7D5, B2H762	Poor MS/MSD precision

Comments: None

Appendix 3

Annotated Laboratory Reports

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H763

GC Semivolatiles

Lot-Sample #...: F1I140442-001 Work Order #...: MMFCE1AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/16/11 Analysis Date..: 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1
% Moisture.....: 1.3 Method.....: SW846 8081A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin		ND	1.7	ug/kg	0.31
alpha-BHC		ND	1.7	ug/kg	0.18
beta-BHC		ND	1.7	ug/kg	0.30
delta-BHC		ND	1.7	ug/kg	0.24
gamma-BHC (Lindane)		ND	1.7	ug/kg	0.17
alpha-Chlordane		ND	1.7	ug/kg	0.57
gamma-Chlordane		ND	1.7	ug/kg	0.16
4,4'-DDD	UJ	ND	1.7	ug/kg	0.22
4,4'-DDE		ND	1.7	ug/kg	0.39
4,4'-DDT		ND	1.7	ug/kg	0.63
Dieldrin		ND	1.7	ug/kg	0.22
Endosulfan I		ND	1.7	ug/kg	0.57
Endosulfan II		ND	1.7	ug/kg	0.24
Endosulfan sulfate		ND	1.7	ug/kg	0.34
Endrin		ND	1.7	ug/kg	0.16
Endrin aldehyde		ND	1.7	ug/kg	0.39
Endrin ketone		ND	1.7	ug/kg	0.42
Heptachlor		ND N	1.7	ug/kg	0.20
Heptachlor epoxide		ND	1.7	ug/kg	0.43
Methoxychlor		ND	3.3	ug/kg	0.72
Toxaphene		ND	67	ug/kg	15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	90	(35 - 128)
Decachlorobiphenyl	95	(26 - 150)

NOTE(S):

N Spiked analyte recovery is outside stated control limits.

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D4

GC Semivolatiles

Lot-Sample #...: F1I140442-002 Work Order #...: MMFL71AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/16/11 Analysis Date..: 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1
% Moisture.....: 1.3 Method.....: SW846 8081A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin		ND	1.7	ug/kg	0.31
alpha-BHC		ND	1.7	ug/kg	0.18
beta-BHC		ND	1.7	ug/kg	0.30
delta-BHC		ND	1.7	ug/kg	0.24
gamma-BHC (Lindane)		ND	1.7	ug/kg	0.17
alpha-Chlordane		ND	1.7	ug/kg	0.57
gamma-Chlordane		ND	1.7	ug/kg	0.16
4,4'-DDD	UJ	ND	1.7	ug/kg	0.22
4,4'-DDE		ND	1.7	ug/kg	0.39
4,4'-DDT		ND	1.7	ug/kg	0.63
Dieldrin		ND	1.7	ug/kg	0.22
Endosulfan I		ND	1.7	ug/kg	0.57
Endosulfan II		ND	1.7	ug/kg	0.24
Endosulfan sulfate		ND	1.7	ug/kg	0.34
Endrin		ND	1.7	ug/kg	0.16
Endrin aldehyde		ND	1.7	ug/kg	0.39
Endrin ketone		ND	1.7	ug/kg	0.42
Heptachlor		ND N	1.7	ug/kg	0.20
Heptachlor epoxide		ND	1.7	ug/kg	0.43
Methoxychlor		ND	3.3	ug/kg	0.72
Toxaphene		ND	67	ug/kg	15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	96	(35 - 128)
Decachlorobiphenyl	95	(26 - 150)

NOTE(S):

N Spiked analyte recovery is outside stated control limits.

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D5

GC Semivolatiles

Lot-Sample #...: F1I140442-003 **Work Order #...:** MMFL81AC **Matrix.....:** SOLID
Date Sampled...: 09/08/11 **Date Received..:** 09/14/11
Prep Date.....: 09/16/11 **Analysis Date..:** 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1
% Moisture.....: 0.30 **Method.....:** SW846 8081A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin		ND	1.7	ug/kg	0.31
alpha-BHC		ND	1.7	ug/kg	0.18
beta-BHC		ND	1.7	ug/kg	0.30
delta-BHC		ND	1.7	ug/kg	0.24
gamma-BHC (Lindane)		ND	1.7	ug/kg	0.17
alpha-Chlordane		ND	1.7	ug/kg	0.57
gamma-Chlordane		ND	1.7	ug/kg	0.16
4,4'-DDD	UJ	ND	1.7	ug/kg	0.22
4,4'-DDE		ND	1.7	ug/kg	0.39
4,4'-DDT		ND	1.7	ug/kg	0.63
Dieldrin		ND	1.7	ug/kg	0.22
Endosulfan I		ND	1.7	ug/kg	0.57
Endosulfan II		ND	1.7	ug/kg	0.24
Endosulfan sulfate		ND	1.7	ug/kg	0.34
Endrin		ND	1.7	ug/kg	0.16
Endrin aldehyde		ND	1.7	ug/kg	0.39
Endrin ketone		ND	1.7	ug/kg	0.42
Heptachlor		ND N	1.7	ug/kg	0.20
Heptachlor epoxide		ND	1.7	ug/kg	0.43
Methoxychlor		ND	3.3	ug/kg	0.72
Toxaphene		ND	67	ug/kg	15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	96	(35 - 128)
Decachlorobiphenyl	96	(26 - 150)

NOTE(S):

N Spiked analyte recovery is outside stated control limits.

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H762

GC Semivolatiles

Lot-Sample #...: F1I140442-004 Work Order #...: MMFMC1AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/16/11 Analysis Date..: 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1
% Moisture.....: 1.7 Method.....: SW846 8081A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
Aldrin		ND	1.7	ug/kg	0.31
alpha-BHC		ND	1.7	ug/kg	0.18
beta-BHC		ND	1.7	ug/kg	0.30
delta-BHC		ND	1.7	ug/kg	0.24
gamma-BHC (Lindane)		ND	1.7	ug/kg	0.17
alpha-Chlordane		ND	1.7	ug/kg	0.57
gamma-Chlordane		ND	1.7	ug/kg	0.16
4,4'-DDD	UJ	ND	1.7	ug/kg	0.22
4,4'-DDE		ND	1.7	ug/kg	0.39
4,4'-DDT		ND	1.7	ug/kg	0.63
Dieldrin		ND	1.7	ug/kg	0.22
Endosulfan I		ND	1.7	ug/kg	0.57
Endosulfan II		ND	1.7	ug/kg	0.24
Endosulfan sulfate		ND	1.7	ug/kg	0.34
Endrin		ND	1.7	ug/kg	0.16
Endrin aldehyde		ND	1.7	ug/kg	0.39
Endrin ketone		ND	1.7	ug/kg	0.42
Heptachlor		ND N	1.7	ug/kg	0.20
Heptachlor epoxide		ND	1.7	ug/kg	0.43
Methoxychlor		ND	3.3	ug/kg	0.72
Toxaphene		ND	67	ug/kg	15

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	89	(35 - 128)
Decachlorobiphenyl	97	(26 - 150)

NOTE(S):

N Spiked analyte recovery is outside stated control limits.

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H763

GC Semivolatiles

Lot-Sample #...: F1I140442-001 Work Order #...: MMFCE2AD Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/21/11 Analysis Date..: 09/22/11
Prep Batch #...: 1264093
Dilution Factor: 1
% Moisture.....: 1.3 Method.....: SW846 8151A

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D	ND	80	ug/kg	22
2,4-DB	ND	80	ug/kg	44
2,4,5-TP (Silvex)	ND	20	ug/kg	3.3
2,4,5-T	ND	20	ug/kg	7.9
Dalapon	ND	40	ug/kg	38
Dicamba	ND	40	ug/kg	3.9
MCPP	ND	8000	ug/kg	4800
MCPA	ND	8000	ug/kg	3100
Dichlorprop	ND	80	ug/kg	23
Dinoseb UJ	ND	25	ug/kg	14

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	73	(50 - 150)

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D4

GC Semivolatiles

Lot-Sample #...: F1I140442-002 Work Order #...: MMFL72AD Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/21/11 Analysis Date..: 09/22/11
Prep Batch #...: 1264093
Dilution Factor: 1
% Moisture.....: 1.3 Method.....: SW846 8151A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D		ND	80	ug/kg	22
2,4-DB		ND	80	ug/kg	44
2,4,5-TP (Silvex)		ND	20	ug/kg	3.3
2,4,5-T		ND	20	ug/kg	7.9
Dalapon		ND	40	ug/kg	38
Dicamba		ND	40	ug/kg	3.9
MCPP		ND	8000	ug/kg	4800
MCPA		ND	8000	ug/kg	3100
Dichlorprop		ND	80	ug/kg	23
Dinoseb	UJ	ND	25	ug/kg	14

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	130	(50 - 150)

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D5

GC Semivolatiles

Lot-Sample #...: F1I140442-003 Work Order #...: MMFL82AD Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/21/11 Analysis Date..: 09/22/11
Prep Batch #...: 1264093
Dilution Factor: 11000
% Moisture.....: 0.30 Method.....: SW846 8151A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D		ND	80	ug/kg	22
2,4-DB		ND	80	ug/kg	44
2,4,5-TP (Silvex)		ND	20	ug/kg	3.3
2,4,5-T		ND	20	ug/kg	7.9
Dalapon		ND	40	ug/kg	38
Dicamba		ND	40	ug/kg	3.9
MCPP		ND	8000	ug/kg	4800
MCPA		ND	8000	ug/kg	3100
Dichlorprop		ND	80	ug/kg	23
Dinoseb	UJ	ND	25	ug/kg	14

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	109	(50 - 150)

EH
05/31/12

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H762

GC Semivolatiles

Lot-Sample #...: F1I140442-004 Work Order #...: MMFMC2AD Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/21/11 Analysis Date..: 09/23/11
Prep Batch #...: 1264093
Dilution Factor: 1
% Moisture.....: 1.7 Method.....: SW846 8151A

PARAMETER		RESULT	REPORTING LIMIT	UNITS	MDL
2,4-D		ND	80	ug/kg	22
2,4-DB		ND	80	ug/kg	44
2,4,5-TP (Silvex)		ND	20	ug/kg	3.3
2,4,5-T		ND	20	ug/kg	7.9
Dalapon		ND	40	ug/kg	38
Dicamba		ND	40	ug/kg	3.9
MCPP		ND	8000	ug/kg	4800
MCPA		ND	8000	ug/kg	3100
Dichlorprop		ND	80	ug/kg	23
Dinoseb	UJ	ND	25	ug/kg	14

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	120	(50 - 150)

EH
05/31/12

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
September 26, 2011
Attention: Mike Neely

TestAmerica Laboratories, Inc.

SDG	: SL1120
Number of Samples	: four samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: September 14, 2011

II. Introduction

On September 14, 2011, four 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: F11-096

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

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CH2M Hill Plateau Remediation Company

September 26, 2011
SDG: SL1120

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.

Pesticides

Batch: 1259027

The LCS, MS, and MSD recovery for Heptachlor is outside the upper QC limit, indicating a potential positive bias for that analyte. This analyte was not observed above the reporting limit in the associated samples; therefore the sample data was not adversely affected by this excursion. The analyte is qualified with an "N" flag.

Affected Samples:
F1I140442 (1): B2H763
F1I140442 (2): B2H7D4
F1I140442 (3): B2H7D5
F1I140442 (4): B2H762

The MS/MSD RPD for 4,4'-DDD is not within method acceptance criteria. MS/MSD recoveries are within QC limits demonstrating good extraction performance in the sample matrix.

Affected Samples:
F1I140442 (1): B2H763
F1I140442 (2): B2H7D4
F1I140442 (3): B2H7D5
F1I140442 (4): B2H762

The opening and/or closing CCV recovery was outside the upper QC limit (greater than 20% D) for 4,4'-DDT indicating a potential high bias for this analyte in the samples associated with this CCV. This was on the confirmation column only. No data for this analyte was reported from this column.

Affected Samples:
F1I140442 (1): B2H763
F1I140442 (2): B2H7D4
F1I140442 (3): B2H7D5
F1I140442 (4): B2H762

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TestAmerica Laboratories, Inc.

September 26, 2011
SDG: SL1120

Herbicides

Batch: 1264093

The MS/MSD RPD for Dinoseb is not within method acceptance criteria. MS/MSD recoveries are within QC limits demonstrating good extraction performance in the sample matrix.
Affected Samples:
F1I140442 (1): B2H763
F1I140442 (2): B2H7D4
F1I140442 (3): B2H7D5
F1I140442 (4): B2H762

The CCV recovery for MCPP and MCPA is outside the established QC limits of greater than 20%D. The excursion occurred on the secondary column, which is used for confirmation. No data is reported from the confirmation column.
Affected Samples:
F1I140442 (1): B2H763
F1I140442 (2): B2H7D4
F1I140442 (3): B2H7D5
F1I140442 (4): B2H762

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

SL1120

SDG# SL1120

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-096-174	PAGE 1 OF 1
COLLECTOR: KC Patterson CHPRC (CUR 245)	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AA Zone 1 Sample 24	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil		SAF NO.: F11-096	AIR QUALITY: ☐	
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-24. N/A	ACTUAL SAMPLE DEPTH: Surface	COA: 302682ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: ~~N/A~~ 7975 1081 4303 LW 9/13/11		

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: B2H7H6

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	14/40 Days
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	Pesticides - 8081;	Chloro-Herbicides - EPA8151;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H763	SOIL	SEP 08 2011	1010	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: KC Patterson CHPRC	DATE/TIME: SEP 08 2011 1050	RECEIVED BY/STORED IN: M01109 SSU #1	DATE/TIME: SEP 08 2011 1050
RELINQUISHED BY/REMOVED FROM: M01109 SSU#1	DATE/TIME: 9-13-11 0730	RECEIVED BY/STORED IN: Fm Hall	DATE/TIME: 9-13-11 0730
RELINQUISHED BY/REMOVED FROM: Fm Hall	DATE/TIME: 9-13-11 0800	RECEIVED BY/STORED IN: L.D. Wall	DATE/TIME: SEP 13 2011 0800
RELINQUISHED BY/REMOVED FROM: L.D. Wall CHPRC	DATE/TIME: SEP 13 2011 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: Nicholas Costros	DATE/TIME: 9/14/11 0930
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

SL1120

SDG# SL1120

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-096-180	PAGE 1 OF 1
COLLECTOR: KC Patterson CHPRC (Cur 245)	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AA Zone 1 Sample 33	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil		SAF NO.: F11-096	AIR QUALITY: ☐	
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-~~24~~. N/A	ACTUAL SAMPLE DEPTH: SURFACE	COA: 302682ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: ~~N/A~~ 7975 1081 4303 LW 9/13/11		

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: B2H7H7

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	14/40 Days
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	Pesticides - 8081;	Chloro-Herbicides - EPA8151;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H7D4	SOIL	SEP 08 2011	1010	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: KC Patterson CHPRC	DATE/TIME: SEP 08 2011 1050	RECEIVED BY/STORED IN: M01109 SSU#1	DATE/TIME: SEP 08 2011 1050
RELINQUISHED BY/REMOVED FROM: M01109 SSU#1	DATE/TIME: 9-13-11 0730	RECEIVED BY/STORED IN: FM HALL	DATE/TIME: 9-13-11 0730
RELINQUISHED BY/REMOVED FROM: FM HALL	DATE/TIME: 9-13-11 0800	RECEIVED BY/STORED IN: L.D. Wall CHPRC	DATE/TIME: SEP 13 2011 0800
RELINQUISHED BY/REMOVED FROM: L.D. Wall CHPRC	DATE/TIME: SEP 13 2011 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: NICHOLAS BUSBOSS	DATE/TIME: 9/14/11 0930
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS

** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

SL1120

SDG# SL1120

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-096-182	PAGE 1 OF 1
COLLECTOR: K. Patterson – CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: Area AA Zone 1 Sample 34 Cur	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil		SAF NO.: F11-096	AIR QUALITY: ☐	
ICE CHEST NO.: 245	FIELD LOGBOOK NO.: HNF-N-507 24	ACTUAL SAMPLE DEPTH: N/A	COA: 302682ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica St. Louis	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A 7975 1081 4303		

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

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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	14/40 Days
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	120mL
SAMPLE ANALYSIS	Pesticides - 8081;	Chloro-Herbicides - EPA8151;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H7D5	SOIL	9/8/11	0840	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM: K. Patterson - CHPRC	DATE/TIME: 9/8/11 1050	RECEIVED BY/STORED IN: NO 1109 SSU#1 K. Patterson - CHPRC ebb 9/8/11	DATE/TIME: 9/8/11 1050	** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
RELINQUISHED BY/REMOVED FROM: NO 1109 SSU#1	DATE/TIME: 9-13-11 0730	RECEIVED BY/STORED IN: Fm Hall	DATE/TIME: 9-13-11 0730	
RELINQUISHED BY/REMOVED FROM: Fm Hall	DATE/TIME: 9-13-11 0800	RECEIVED BY/STORED IN: L.D. Wall	DATE/TIME: SEP 13 2011 0800	
RELINQUISHED BY/REMOVED FROM: L.D. Wall	DATE/TIME: SEP 13 2011 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:	
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: DOUGLAS OWENS	DATE/TIME: 9/14/11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:	
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:	

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

SL1120

SDG# SL1120

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-096-173	PAGE 1 OF 1
COLLECTOR KC Patterson CHPRC CWL	COMPANY CONTACT LUKE, SN	TELEPHONE NO. 372-1667	PROJECT COORDINATOR LUKE, SN	PRICE CODE 8C AIR QUALITY ☐	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION Area AA Zone 1 Sample 23 245	PROJECT DESIGNATION Area AA In-Process Sampling - Soil		SAF NO. F11-096		
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-507-24. N/A	ACTUAL SAMPLE DEPTH Surface	COA 302682ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. ~~N/A~~ 7975 1081 4303 DW 9/13/11		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool~4C	Cool~4C
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	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)	HOLDING TIME	14/40 Days	14/40 Days
		TYPE OF CONTAINER	aG	aG
		NO. OF CONTAINER(S)	1	1
		VOLUME	120mL	120mL
	SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B2H7H5	SAMPLE ANALYSIS	Pesticides - 8081;	Chloro-Herbicides - EPA8151;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H762	SOIL	SEP 08 2011	0935	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM KC Patterson CHPRC	DATE/TIME 1050 SEP 08 2011	RECEIVED BY/STORED IN M01109 SSU#1	DATE/TIME SEP 08 2011 1050	** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
RELINQUISHED BY/REMOVED FROM M01109 SSU#1	DATE/TIME 0730 9-13-11	RECEIVED BY/STORED IN Fm HALL	DATE/TIME 0730 9-13-11	
RELINQUISHED BY/REMOVED FROM Fm HALL	DATE/TIME 0800 9-13-11	RECEIVED BY/STORED IN L.D. Wall	DATE/TIME SEP 13 2011 0800	
RELINQUISHED BY/REMOVED FROM L.D. Wall	DATE/TIME SEP 13 2011 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME	
RELINQUISHED BY/REMOVED FROM FEDEX	DATE/TIME	RECEIVED BY/STORED IN NICHOLAS GOMEZ	DATE/TIME 9/14/11 0930	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

TestAmerica St. Louis

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-014		
VALIDATOR: Eyda Hergenreder		LAB: TestAmerica		DATE: 05-31-2012	
			SDG: SL1120		
ANALYSES PERFORMED					
SW-846 8081 X	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	SW-846 8310	SW-846 8151 X
SAMPLES/MATRIX Soil samples B2H763, B2H7D4, B2H7D5, B2H762					

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: None

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:

Heptachlor MS/MSD %R 213%/216%
Dinoseb MS/MSD %R 22%/38%

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:

4,4-DDD MS/MSD RPD 38%
Dinoseb MS/MSD RPD 54%

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:

MDL for MCPP and MCPA were >CRDL

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:

Comments:

More

Appendix 6

Additional Documentation Requested By Client

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: SL1120 **Work Order #...:** MMGTR1AA **Matrix.....:** SOLID
MB Lot-Sample #: F1I160000-027

Prep Date.....: 09/16/11
Analysis Date..: 09/23/11 **Prep Batch #...:** 1259027
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aldrin	ND	1.7	ug/kg	SW846 8081A
alpha-BHC	ND	1.7	ug/kg	SW846 8081A
beta-BHC	ND	1.7	ug/kg	SW846 8081A
delta-BHC	ND	1.7	ug/kg	SW846 8081A
gamma-BHC (Lindane)	ND	1.7	ug/kg	SW846 8081A
alpha-Chlordane	ND	1.7	ug/kg	SW846 8081A
gamma-Chlordane	ND	1.7	ug/kg	SW846 8081A
4,4'-DDD	ND	1.7	ug/kg	SW846 8081A
4,4'-DDE	ND	1.7	ug/kg	SW846 8081A
4,4'-DDT	ND	1.7	ug/kg	SW846 8081A
Dieldrin	ND	1.7	ug/kg	SW846 8081A
Endosulfan I	ND	1.7	ug/kg	SW846 8081A
Endosulfan II	ND	1.7	ug/kg	SW846 8081A
Endosulfan sulfate	ND	1.7	ug/kg	SW846 8081A
Endrin	ND	1.7	ug/kg	SW846 8081A
Endrin aldehyde	ND	1.7	ug/kg	SW846 8081A
Endrin ketone	ND	1.7	ug/kg	SW846 8081A
Heptachlor	ND	1.7	ug/kg	SW846 8081A
Heptachlor epoxide	ND	1.7	ug/kg	SW846 8081A
Methoxychlor	ND	3.3	ug/kg	SW846 8081A
Toxaphene	ND	67	ug/kg	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	91	(35 - 128)
Decachlorobiphenyl	89	(26 - 150)

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1120 Work Order #...: MMGTR1AC Matrix.....: SOLID
LCS Lot-Sample#: F1I160000-027
Prep Date.....: 09/16/11 Analysis Date..: 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Aldrin	16.7	13.7	ug/kg	82	SW846 8081A
alpha-BHC	16.7	14.0	ug/kg	84	SW846 8081A
beta-BHC	16.7	14.5	ug/kg	87	SW846 8081A
delta-BHC	16.7	14.7	ug/kg	88	SW846 8081A
gamma-BHC (Lindane)	16.7	13.8	ug/kg	83	SW846 8081A
alpha-Chlordane	16.7	15.0	ug/kg	90	SW846 8081A
gamma-Chlordane	16.7	14.7	ug/kg	88	SW846 8081A
4,4'-DDD	16.7	15.1	ug/kg	91	SW846 8081A
4,4'-DDE	16.7	15.0	ug/kg	90	SW846 8081A
4,4'-DDT	16.7	16.1	ug/kg	96	SW846 8081A
Dieldrin	16.7	15.7	ug/kg	94	SW846 8081A
Endosulfan I	16.7	15.5	ug/kg	93	SW846 8081A
Endosulfan II	16.7	15.2	ug/kg	91	SW846 8081A
Endosulfan sulfate	16.7	14.9	ug/kg	90	SW846 8081A
Endrin	16.7	15.9	ug/kg	95	SW846 8081A
Endrin aldehyde	16.7	14.9	ug/kg	89	SW846 8081A
Endrin ketone	16.7	15.0	ug/kg	90	SW846 8081A
Heptachlor	16.7	23.1	ug/kg	139	SW846 8081A
Heptachlor epoxide	16.7	14.8	ug/kg	89	SW846 8081A
Methoxychlor	16.7	16.0	ug/kg	96	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	83	(72 - 105)
Decachlorobiphenyl	91	(65 - 115)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1120 Work Order #...: MMFCE1AF-MS Matrix.....: SOLID
MS Lot-Sample #: F1I140442-001 MMFCE1AG-MSD
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/16/11 Analysis Date..: 09/23/11
Prep Batch #...: 1259027
Dilution Factor: 1 % Moisture.....: 1.3

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Aldrin	ND	16.7	13.5	ug/kg	81		SW846 8081A
	ND	16.6	15.4	ug/kg	93	13	SW846 8081A
alpha-BHC	ND	16.7	14.0	ug/kg	84		SW846 8081A
	ND	16.6	15.7	ug/kg	95	11	SW846 8081A
beta-BHC	ND	16.7	14.0	ug/kg	84		SW846 8081A
	ND	16.6	15.2	ug/kg	92	8.0	SW846 8081A
delta-BHC	ND	16.7	15.1	ug/kg	90		SW846 8081A
	ND	16.6	16.6	ug/kg	100	9.8	SW846 8081A
gamma-BHC (Lindane)	ND	16.7	13.6	ug/kg	81		SW846 8081A
	ND	16.6	15.6	ug/kg	94	14	SW846 8081A
alpha-Chlordane	ND	16.7	14.3	ug/kg	85		SW846 8081A
	ND	16.6	15.9	ug/kg	96	11	SW846 8081A
gamma-Chlordane	ND	16.7	15.1	ug/kg	90		SW846 8081A
	ND	16.6	16.4	ug/kg	99	8.4	SW846 8081A
4,4'-DDD	ND	16.7	14.3	ug/kg	85		SW846 8081A
	ND	16.6	20.9	ug/kg	126	38	SW846 8081A
4,4'-DDE	ND	16.7	14.9	ug/kg	89		SW846 8081A
	ND	16.6	16.1	ug/kg	97	7.9	SW846 8081A
4,4'-DDT	ND	16.7	14.9	ug/kg	89		SW846 8081A
	ND	16.6	18.9	ug/kg	114	24	SW846 8081A
Dieldrin	ND	16.7	15.9	ug/kg	95		SW846 8081A
	ND	16.6	17.0	ug/kg	102	6.6	SW846 8081A
Endosulfan I	ND	16.7	15.7	ug/kg	94		SW846 8081A
	ND	16.6	16.8	ug/kg	101	6.6	SW846 8081A
Endosulfan II	ND	16.7	15.1	ug/kg	90		SW846 8081A
	ND	16.6	17.0	ug/kg	102	12	SW846 8081A
Endosulfan sulfate	ND	16.7	14.8	ug/kg	89		SW846 8081A
	ND	16.6	16.0	ug/kg	96	7.6	SW846 8081A
Endrin	ND	16.7	16.1	ug/kg	96		SW846 8081A
	ND	16.6	17.7	ug/kg	107	9.5	SW846 8081A
Endrin aldehyde	ND	16.7	13.7	ug/kg	82		SW846 8081A
	ND	16.6	17.6	ug/kg	106	25	SW846 8081A
Endrin ketone	ND	16.7	15.2	ug/kg	91		SW846 8081A
	ND	16.6	16.7	ug/kg	101	9.7	SW846 8081A
Heptachlor	ND	16.7	35.6	ug/kg	213		SW846 8081A
		Qualifiers:	N				
	ND	16.6	36.0	ug/kg	216	0.87	SW846 8081A
		Qualifiers:	N				
Heptachlor epoxide	ND	16.7	15.1	ug/kg	90		SW846 8081A
	ND	16.6	16.9	ug/kg	102	12	SW846 8081A

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1120 Work Order #...: MMFCE1AF-MS Matrix.....: SOLID
MS Lot-Sample #: F1I140442-001 MMFCE1AG-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Methoxychlor	ND	16.7	15.1	ug/kg	90		SW846 8081A
	ND	16.6	15.9	ug/kg	96	5.2	SW846 8081A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	83	(35 - 128)
	96	(35 - 128)
Decachlorobiphenyl	94	(26 - 150)
	101	(26 - 150)

NOTE(S):

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

Bold print denotes control parameters

N Spiked analyte recovery is outside stated control limits.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: SL1120 **Work Order #...:** MMLJ91AA **Matrix.....:** SOLID
MB Lot-Sample #: F1I210000-093

Prep Date.....: 09/21/11
Analysis Date..: 09/22/11 **Prep Batch #...:** 1264093
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2,4-D	ND	80	ug/kg	SW846 8151A
2,4-DB	ND	80	ug/kg	SW846 8151A
2,4,5-TP (Silvex)	ND	20	ug/kg	SW846 8151A
2,4,5-T	ND	20	ug/kg	SW846 8151A
Dalapon	ND	40	ug/kg	SW846 8151A
Dicamba	ND	40	ug/kg	SW846 8151A
MCPP	ND	8000	ug/kg	SW846 8151A
MCPA	ND	8000	ug/kg	SW846 8151A
Dichlorprop	ND	80	ug/kg	SW846 8151A
Dinoseb	ND	25	ug/kg	SW846 8151A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	106	(50 - 150)

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1120 Work Order #...: MMLJ91AC Matrix.....: SOLID
LCS Lot-Sample#: F1I210000-093
Prep Date.....: 09/21/11 Analysis Date..: 09/22/11
Prep Batch #...: 1264093
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,4-D	500	628	ug/kg	126	SW846 8151A
2,4-DB	500	563	ug/kg	113	SW846 8151A
2,4,5-TP (Silvex)	50.0	58.9	ug/kg	118	SW846 8151A
2,4,5-T	50.0	64.9	ug/kg	130	SW846 8151A
Dalapon	1250	958	ug/kg	77	SW846 8151A
Dicamba	50.0	64.4	ug/kg	129	SW846 8151A
MCPP	50000	52100	ug/kg	104	SW846 8151A
MCPA	50000	53400	ug/kg	107	SW846 8151A
Dichlorprop	500	596	ug/kg	119	SW846 8151A
Dinoseb	250	265	ug/kg	106	SW846 8151A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	119	(38 - 140)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: SL1120 Work Order #...: MMFL71AF-MS Matrix.....: SOLID
MS Lot-Sample #: F1I140442-002 MMFL71AG-MSD
Date Sampled...: 09/08/11 Date Received..: 09/14/11
Prep Date.....: 09/21/11 Analysis Date..: 09/22/11
Prep Batch #...: 1264093
Dilution Factor: 1 % Moisture.....: 1.3

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,4-D	ND	500	691	ug/kg	138		SW846 8151A
	ND	499	720	ug/kg	144	4.1	SW846 8151A
2,4-DB	ND	500	551	ug/kg	110		SW846 8151A
	ND	499	622	ug/kg	125	12	SW846 8151A
2,4,5-TP (Silvex)	ND	50.0	65.6	ug/kg	131		SW846 8151A
	ND	49.9	64.7	ug/kg	130	1.4	SW846 8151A
2,4,5-T	ND	50.0	63.0	ug/kg	126		SW846 8151A
	ND	49.9	70.1	ug/kg	140	11	SW846 8151A
Dalapon	ND	1250	944	ug/kg	76		SW846 8151A
	ND	1250	1030	ug/kg	83	8.7	SW846 8151A
Dicamba	ND	50.0	67.2	ug/kg	134		SW846 8151A
	ND	49.9	70.5	ug/kg	141	4.8	SW846 8151A
MCPP	ND	50000	48500	ug/kg	97		SW846 8151A
	ND	49900	57200	ug/kg	115	16	SW846 8151A
MCPA	ND	50000	51800	ug/kg	104		SW846 8151A
	ND	49900	58500	ug/kg	117	12	SW846 8151A
Dichlorprop	ND	500	543	ug/kg	109		SW846 8151A
	ND	499	644	ug/kg	129	17	SW846 8151A
Dinoseb	ND	250	54.9	ug/kg	22		SW846 8151A
	ND	250	95.9	ug/kg	38	54	SW846 8151A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	113	(50 - 150)
	137	(50 - 150)

NOTE(S):

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

Bold print denotes control parameters

Date: 31 May 2012
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: 100-K
Subject: PCBs - Sample Data Group (SDG) SL1128

INTRODUCTION

This memorandum presents the results of data validation for SDG SL1128 prepared by TestAmerica Laboratories Inc. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Method
B2H7D2	09/08/11	Soil	C	8082A
B2H760	09/08/11	Soil	C	8082A
B2H7D3	09/08/11	Soil	C	8082A
B2H761	09/08/11	Soil	C	8082A

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

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

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

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

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

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

All equipment blank results were acceptable.

- **Accuracy**

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

Surrogates

All surrogate recoveries were acceptable.

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

All MS/MSD recoveries were acceptable.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%.

MS/MSD Samples

All MS/MSD RPD 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 MDLs were above the requested calculated action level.

- **Completeness**

SDG SL1128 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.

- **C** — This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).

- **X** — This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful. The data should be considered unusable for decision-making purposes.

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

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

Appendix 2

Summary of Data Qualification

PCB Data Qualification Summary			
SDG: SL1128	Reviewer: AQA	Project: 100-K	Page 1 of 1
Analyte(s)	**Qualifier**	**Samples Affected**	**Reason**
PCBs	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D2

GC Semivolatiles

Lot-Sample #...: F1I230433-001 Work Order #...: MMNRM1AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/23/11
Prep Date.....: 09/26/11 Analysis Date..: 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1
% Moisture.....: 1.2 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	33	ug/kg	8.7
Aroclor 1221	ND	33	ug/kg	8.7
Aroclor 1232	ND	33	ug/kg	8.7
Aroclor 1242	ND	33	ug/kg	8.7
Aroclor 1248	ND	33	ug/kg	8.7
Aroclor 1254	ND	33	ug/kg	5.5
Aroclor 1260	ND	33	ug/kg	5.5
Aroclor 1262	ND	33	ug/kg	5.5
Aroclor 1268	ND	33	ug/kg	5.5

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

OCTOBER 6, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H760

GC Semivolatiles

Lot-Sample #...: F1I230433-002 Work Order #...: MMNRW1AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/23/11
Prep Date.....: 09/26/11 Analysis Date..: 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1
% Moisture.....: 1.6 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	33	ug/kg	8.7
Aroclor 1221	ND	33	ug/kg	8.7
Aroclor 1232	ND	33	ug/kg	8.7
Aroclor 1242	ND	33	ug/kg	8.7
Aroclor 1248	ND	33	ug/kg	8.7
Aroclor 1254	**12 J**	**33**	**ug/kg**	**5.5**
Aroclor 1260	ND	33	ug/kg	5.5
Aroclor 1262	ND	33	ug/kg	5.5
Aroclor 1268	ND	33	ug/kg	5.5

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

NOTE(S):

J Estimated result. Result is less than RL.

OCTOBER 6, 2011

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H7D3

GC Semivolatiles

Lot-Sample #...: F1I230433-003 Work Order #...: MMNRX1AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/23/11
Prep Date.....: 09/26/11 Analysis Date..: 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1
% Moisture.....: 0.020 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	33	ug/kg	8.7
Aroclor 1221	ND	33	ug/kg	8.7
Aroclor 1232	ND	33	ug/kg	8.7
Aroclor 1242	ND	33	ug/kg	8.7
Aroclor 1248	ND	33	ug/kg	8.7
Aroclor 1254	ND	33	ug/kg	5.5
Aroclor 1260	ND	33	ug/kg	5.5
Aroclor 1262	ND	33	ug/kg	5.5
Aroclor 1268	ND	33	ug/kg	5.5

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	100	(54 - 150)

CH2M Hill Plateau Remediation DOE RL

Client Sample ID: B2H761

GC Semivolatiles

Lot-Sample #...: F1I230433-004 Work Order #...: MMNR11AC Matrix.....: SOLID
Date Sampled...: 09/08/11 Date Received..: 09/23/11
Prep Date.....: 09/26/11 Analysis Date..: 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1
% Moisture.....: 1.2 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	33	ug/kg	8.7
Aroclor 1221	ND	33	ug/kg	8.7
Aroclor 1232	ND	33	ug/kg	8.7
Aroclor 1242	ND	33	ug/kg	8.7
Aroclor 1248	ND	33	ug/kg	8.7
Aroclor 1254	ND	33	ug/kg	5.5
Aroclor 1260	ND	33	ug/kg	5.5
Aroclor 1262	ND	33	ug/kg	5.5
Aroclor 1268	ND	33	ug/kg	5.5

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	106	(54 - 150)

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
October 5, 2011
Attention: Scot Fitzgerald

TestAmerica Laboratories, Inc.

SDG	: SL1128
Number of Samples	: four samples
Sample Matrix	: Solid
Data Deliverable	: Summary
Date SDG Closed	: September 23, 2011

II. Introduction

On September 23, 2011, four 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: F11-096

III. Analytical Results/ Methodology

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

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

Deviation from Request: None

IV. Definitions

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

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CH2M Hill Plateau Remediation Company

TestAmerica Laboratories, Inc.

October 5, 2011
SDG: SL1128

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.

There were no observations or nonconformances for the following methods:

PCBs

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

SL1128

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-179 -D

SDG# SL1128

COLLECTOR: KC Patterson CHPRC CWR 49	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN	PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days
SAMPLING LOCATION: Area AA Zone 1 Sample 33	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil		SAF NO.: F11-096	AIR QUALITY: ☐	
ICE CHEST NO.: GWS-172	FIELD LOGBOOK NO.: HNF-N-507-24	ACTUAL SAMPLE DEPTH: Surface	COA: 302682ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: ~~Waste Sampling & Characterization~~ TASL VA 9-21-11	OFFSITE PROPERTY NO.: N/A			BILL OF LADING/AIR BILL NO.: ~~N/A~~ 7975 4672 1347 AW 9/22/11	

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

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H7D2	3 SOIL	SEP 08 2011	1010	✓	✓

* Please email copies of Chains of Custody, Sample Receipt Forms, and Final Reports to Marisol Avila (marisol_avila@rl.gov) and Heather Medley (Heather_A_Medley@rl.gov), WCSF project managers. AW 9/21/11

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: KC Patterson CHPRC	DATE/TIME: 1250 SEP 08 2011	RECEIVED BY/STORED IN: C Johnson	DATE/TIME: 1250 SEP 08 2011
RELINQUISHED BY/REMOVED FROM: TA Frazier	DATE/TIME: 9-21-11 1500	RECEIVED BY/STORED IN: DON BROTHERTON / CHPRC	DATE/TIME: 9-21-11 1500
RELINQUISHED BY/REMOVED FROM: DON BROTHERTON / CHPRC	DATE/TIME: ~~SEP~~ AUG 21 2011 1530	RECEIVED BY/STORED IN: SSU #1	DATE/TIME: ~~SEP~~ AUG 21 2011 1530
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: SEP 22 2011 1100	RECEIVED BY/STORED IN: L.D. Wall CHPRC	DATE/TIME: SEP 22 2011 1100
RELINQUISHED BY/REMOVED FROM: L.D. Wall CHPRC	DATE/TIME: SEP 22 2011 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FEDEX	DATE/TIME:	RECEIVED BY/STORED IN: NICHOLAS STEVENS	DATE/TIME: 9/23/11 0915

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};

* See Above AW 9/21/11

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

OCTOBER 6, 2011

SDG# SL1128

SL1128

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-171—D

COLLECTOR KC Patterson CHPRC CWR

SAMPLING LOCATION Area AA Zone 1 Sample 23

ICE CHEST NO. GWS-172

SHIPPED TO DWP 9/21-11 ~~Waste Sampling & Characterization~~ TASL

COMPANY CONTACT LUKE, SN

TELEPHONE NO. 372-1667

PROJECT DESIGNATION Area AA In-Process Sampling - Soil

FIELD LOGBOOK NO. HNF-~~N-507~~-24.

OFFSITE PROPERTY NO. N/A

ACTUAL SAMPLE DEPTH Surface

PROJECT COORDINATOR LUKE, SN

SAF NO. F11-096

COA 302682ES10

BILL OF LADING/AIR BILL NO. ~~N/A~~ 7975 4672 1347 DW. 9/22/11

PRICE CODE C01

AIR QUALITY [ ]

METHOD OF SHIPMENT GOVERNMENT VEHICLE

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	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS SVOA TPHD	SEE ITEM (2) IN SPECIAL INSTRUCTIONS PCB

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B2H760	SOIL	SEP 08 2011	0935	✓	✓

113124

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	1250 SEP 08 2011	C Johnson	1250 SEP 08 2011
TA Enzimkeesch	9-21-11 1500	DON BROTHERTON / CHPRC	9-21-11 1500
DON BROTHERTON / CHPRC	~~AUG~~ SEP 21 2011 1530	SSU #1	~~AUG~~ SEP 21 2011 1530
SSU-1	SEP 22 2011 1100	L.D. Wall CHPRC	SEP 22 2011 1100
L.D. Wall CHPRC	SEP 22 2011 1400	FEDEX	
FEDEX		NICHOLAS PARSONS	9/23/11 0700

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};

Please email copies of Chains of Custody, Sample Receipt Forms and Final Report to (Mar.Sol_Avila@rl.gov) Marisol Avila and Heather Medley (Heather_A_Medley@rl.gov)

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

WSCF project managers. dln 9/21/11

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

OCTOBER 6, 2011

TestAmerica St. Louis

SL1128

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-181-D

SDG# SL1128

COLLECTOR Kevin Patterson / CHPRC

SAMPLING LOCATION Area AA Zone 1 Sample 34 — Cell 44

ICE CHEST NO. GWS-172

SHIPPED TO ~~Waste Sampling & Characterization~~ TASL — 9-21-11

COMPANY CONTACT LUKE, SN

TELEPHONE NO. 372-1667

PROJECT DESIGNATION Area AA In-Process Sampling - Soil

FIELD LOGBOOK NO. HNF-N-507 24

ACTUAL SAMPLE DEPTH N/A

OFFSITE PROPERTY NO. N/A

PROJECT COORDINATOR LUKE, SN

SAF NO. F11-096

COA 302682ES10

BILL OF LADING/AIR BILL NO. N/A — 7975 4672 1347 — LW 9/22/11

PRICE CODE 8C

AIR QUALITY ☐

DATA TURNAROUND 15 Days / 15 Days

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	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	[redacted]	
B2H7D3	4 SOIL	9/8/11	0840	✓	✓

* Please email copies of Chain of Custodies, Sample Receipt Forms, and Final Reports to Marisol Avila (Marisol_Avila@rl.gov) and Heather Medley (Heather_A_Medley@rl.gov), WSCF Project Managers.

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
K. Patterson-CHPRC	9/8/11 1250	C Johnson	9/8/11 1250
TASL	9-21-11 1500	DON BROTHERTON / CHPRC	9-21-11 1500
DON BROTHERTON / CHPRC	~~AUG~~ SEP 21 2011 1530	SSU #1	~~AUG~~ SEP 21 2011 1530
SSU-1	SEP 22 2011 1100	L.D. Wall CHPRC	SEP 22 2011 1100
L.D. Wall	SEP 22 2011 1400	FEDEX	
FedEx		NICHOLAS CUSENS	9/23/11 0915

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};

* See Above CHW 9/21/11

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

OCTOBER 6, 2011
TestAmerica St. Louis

SDG# SL1128

SL1128

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-096-172 D

COLLECTOR: KC Patterson CHPRC	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
PRICE CODE: C01	DATA TURNAROUND: 12 Days / 12 Days	SAMPLING LOCATION: Area AA Zone 1 Sample 24	PROJECT DESIGNATION: Area AA In-Process Sampling - Soil
SAF NO.: F11-096	AIR QUALITY: ☐	ICE CHEST NO.: GWS-000	FIELD LOGBOOK NO.: HNF-N-507-24
ACTUAL SAMPLE DEPTH: Surface	COA: 302682ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: DNB 9-21-11 TASL ~~Waste Sampling & Characterization~~	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A 7975 4668 1020	

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

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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	Cool~4C
HOLDING TIME	14/40 Days	1 yr/1 yr
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	[redacted]	
B2H761	2 SOIL	SEP 08 2011	1010	✓	✓

* Please email copies of Chains of Custodies, Sample Receipt forms, and Final Report to Mariso Avila (marisol_avila@rl.gov) and Heather Medley (heather_medley@rl.gov) DN 9/21/11

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	1250 SEP 08 2011	C Johnson	1250 SEP 08 2011
TA Pinazian	9-21-11 1500	DON BROTHERTON / CHPRC	9-21-11 1500
DON BROTHERTON / CHPRC	1530 ~~AUG~~ SEP 21 2011	SSU #1	1530 ~~AUG~~ SEP 21 2011
SSU-1	SEP 22 2011 0930	L.D. Wall	SEP 22 2011 0930
L.D. Wall CHPRC	SEP 22 2011 1400	FEDEX	
FEDEX		NICHOLAS CASTRO	9/23/11 0915

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402581ES20.
** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Semi-VOA - 8270 (TCL); TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range};
(2) PCBs - 8082 {Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268};
* See above DN 9/21/11

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

PRINTED ON 9/7/2011

A-6003-618 (REV 2)

OCTOBER 6, 2011

TestAmerica St. Louis

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-K			DATA PACKAGE: VSR12-014		
VALIDATOR: Eyda Hergenreder		LAB: TestAmerica		DATE: 05-31-2012	
			SDG: SL1128		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082 X	SW-846 8081 (TCLP)	SW-846 8310	
SAMPLES/MATRIX Soil samples B2H7D2, B2H760, B2H7D3, B2H761					

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: None

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: 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. 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: None

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:

Comments:

More

Appendix 6

Additional Documentation Requested By Client

OCTOBER 6, 2011

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: F1I230433 Work Order #...: MMPP51AA Matrix.....: SOLID
MB Lot-Sample #: F1I260000-059

Prep Date.....: 09/26/11
Analysis Date..: 09/27/11 Prep Batch #...: 1269059
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082
Aroclor 1262	ND	33	ug/kg	SW846 8082
Aroclor 1268	ND	33	ug/kg	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	94	(54 - 150)

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: F1I230433 **Work Order #...:** MMPP51AC **Matrix.....:** SOLID
LCS Lot-Sample#: F1I260000-059
Prep Date.....: 09/26/11 **Analysis Date..:** 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Aroclor 1016	**167**	**182**	**ug/kg**	**109**	**SW846 8082**
Aroclor 1260	**167**	**189**	**ug/kg**	**113**	**SW846 8082**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	108	(74 - 140)

NOTE(S):

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

Bold print denotes control parameters

OCTOBER 6, 2011

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...: F1I230433 Work Order #...: MMNRD1AE-MS Matrix.....: SOLID
MS Lot-Sample #: F1I230430-001 MMNRD1AF-MSD
Date Sampled...: 08/05/11 Date Received..: 09/23/11
Prep Date.....: 09/26/11 Analysis Date..: 09/27/11
Prep Batch #...: 1269059
Dilution Factor: 1 % Moisture.....: 0.010

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Aroclor 1016	ND	167	160	ug/kg	96		SW846 8082
	ND	167	174	ug/kg	105	8.9	SW846 8082
Aroclor 1260	ND	167	153	ug/kg	92		SW846 8082
	ND	167	175	ug/kg	105	14	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	91	(54 - 150)
	103	(54 - 150)

NOTE(S):

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

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.