



616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Data Validation Report for CH2M Hill Plateau Remediation Company

**VSR11-034
Project BOS**

Chemical Validation - Level C

Validation Performed By: *Eyda Hergenreder* Date: 3-04-2011
Eyda Hergenreder

Validation Reviewed By: *Carl Schneider* Date: 3-04-2011

TABLE OF CONTENTS

PCB Aroclors

Memorandum	3
Appendix 1 – Glossary of Data Reporting Qualifiers	6
Appendix 2 – Summary of Data Qualification	9
Appendix 3 – Annotated Laboratory Reports	11
Appendix 4 – Laboratory Narrative and Chain-of-Custody Documentation	18
Appendix 5 – Data Validation Supporting Documentation	25
Appendix 6 – Additional Documentation Requested By Client	32

Inorganics

Memorandum	36
Appendix 1 – Glossary of Data Reporting Qualifiers	40
Appendix 2 – Summary of Data Qualification	42
Appendix 3 – Annotated Laboratory Reports	44
Appendix 4 – Laboratory Narrative and Chain-of-Custody Documentation	51
Appendix 5 – Data Validation Supporting Documentation	58
Appendix 6 – Additional Documentation Requested By Client	65

Date: 04 March 2011
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: BOS
 Subject: PCBs - Sample Data Group (SDG) WSCF111233

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF111233 prepared by WSCF. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Method
B2BDL3	01/20/11	Soil	C	8082
B2BDL4	01/20/11	Soil	C	8082
B2BDL9	01/20/11	Soil	C	8082
B2BDM0	01/20/11	Soil	C	8082
B2BDM1	01/20/11	Soil	C	8082
B2BDM2	01/20/11	Soil	C	8082

Data validation was conducted in accordance with the CHPRC validation statement of work and the 212-R Railcar Characterization Sampling and Analysis Plan, DOE/RL-2010-112, Rev. 0 (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 1 year of sample collection and analysis within 1 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

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the laboratory control sample accuracy limits are 70% to 130%. The matrix spike sample accuracy limits are ones specified by the DV procedure.

Surrogates

All surrogate recoveries were acceptable with the following exceptions. The tetrachloro-m-xylene and decachlorobiphenyl surrogate recoveries for sample B2BDM0 were above the upper acceptance limits. All sample results were non-detects and should not be qualified.

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

All MS/MSD recoveries were acceptable. It should be noted that aroclor-1254 was the only analyte reported for the MS/MSD. Method 8082A guidance specifies aroclor-1016 and aroclor-1260 for MS/MSD analyses. No sample data were qualified as a result.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable. It should be noted that aroclor-1254 was the only analyte reported for the LCS. Method 8082A guidance specifies aroclor-1016 and aroclor-1260 for LCS analyses. No sample data are qualified as a result.

- **Precision**

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

MS/MSD Samples

All MS/MSD RPD values were acceptable.

Field Duplicate Samples

No field duplicates were submitted for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

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

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

- **Completeness**

SDG WSCF111233 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-2010-112, Rev. 0, *212-R Railcar Characterization Sampling and Analysis Plan*, January 2011.

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: WSCF111233	Reviewer: AQA	Project: BOS	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
PCBs	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233001 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDL3 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1221	11104-28-2	LA-523-427	UD	<9.E5		ug/kg	1000	9.E5	2.E6	02/02/11
Aroclor-1232	11141-16-5	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1242	53469-21-9	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1248	12672-29-6	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1254	11097-69-1	LA-523-427	DN	3.7E6		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1260	11096-82-5	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1262	37324-23-5	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11
Aroclor-1268	11100-14-4	LA-523-427	UD	<5.E5		ug/kg	1000	5.E5	9.E5	02/02/11

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 dilution 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)

REVISED111233 -

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233002 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDL4 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1221	11104-28-2	LA-523-427	UD	<8.E5		ug/kg	1000	8.E5	2.E6	02/02/11
Aroclor-1232	11141-16-5	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1242	53469-21-9	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1248	12672-29-6	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1254	11097-69-1	LA-523-427	DN	5.7E6		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1260	11096-82-5	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1262	37324-23-5	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11
Aroclor-1268	11100-14-4	LA-523-427	UD	<4.E5		ug/kg	1000	4.E5	8.E5	02/02/11

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 dilution 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)

REVISED111233 -

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233003 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDL9 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1221	11104-28-2	LA-523-427	UD	<7.E3		ug/kg	10	7.E3	1.E4	02/01/11
Aroclor-1232	11141-16-5	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1242	53469-21-9	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1248	12672-29-6	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1254	11097-69-1	LA-523-427	UDN	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1260	11096-82-5	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1262	37324-23-5	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11
Aroclor-1268	11100-14-4	LA-523-427	UD	<4.E3		ug/kg	10	4.E3	7.E3	02/01/11

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 dilution 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)

REVISED111233 -

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233004 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDM0 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1221	11104-28-2	LA-523-427	U	<700		ug/kg	1	700	1.E3	02/02/11
Aroclor-1232	11141-16-5	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1242	53469-21-9	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1248	12672-29-6	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1254	11097-69-1	LA-523-427	UN	<400		ug/kg	1	400	700	02/02/11
Aroclor-1260	11096-82-5	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1262	37324-23-5	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11
Aroclor-1268	11100-14-4	LA-523-427	U	<400		ug/kg	1	400	700	02/02/11

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 dilution 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)

REVISED111233 -

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233005 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDM1 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1221	11104-28-2	LA-523-427	U	<900		ug/kg	1	900	2.E3	02/02/11
Aroclor-1232	11141-16-5	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1242	53469-21-9	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1248	12672-29-6	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1254	11097-69-1	LA-523-427	UN	<500		ug/kg	1	500	900	02/02/11
Aroclor-1260	11096-82-5	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1262	37324-23-5	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11
Aroclor-1268	11100-14-4	LA-523-427	U	<500		ug/kg	1	500	900	02/02/11

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 dilution 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)

REVISED111233 -

WSCF Analytical Results Report

Attention Rod Jochen **Group #** WSCF111233
Department Organic, Semivolatiles

Sample # 111233006 **Matrix** SOIL
SAF# D11-004 **Sampled** 01/20/11
Sample ID B2BDM2 **Received** 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
PCB Prep Solids										
PCBs										
Aroclor-1016	12674-11-2	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1221	11104-28-2	LA-523-427	U	<900		ug/kg	1	900	2.E3	02/02/11
Aroclor-1232	11141-16-5	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1242	53469-21-9	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1248	12672-29-6	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1254	11097-69-1	LA-523-427	UN	<400		ug/kg	1	400	900	02/02/11
Aroclor-1260	11096-82-5	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1262	37324-23-5	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11
Aroclor-1268	11100-14-4	LA-523-427	U	<400		ug/kg	1	400	900	02/02/11

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 dilution 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)

REVISED111233 -

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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.

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

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

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

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

- All applicable QC controls are within the established limits.

Organic Comments

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

- B2BDL9 (111233003) did not meet the acceptance limits for surrogate Tetrachloro-m-xylene and B2BDM0 did not meet the acceptance limits for surrogate Tetrachloro-m-xylene and Decachlorobiphenyl. QC Sample blank #47402 did not meet the acceptance limits for surrogate Tetrachloro-m-xylene. Sample results were not flagged. The quality control report was flagged for surrogate recovery failure.
- Aroclor 1254 Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were “N” flagged.
- All other applicable QC controls are within the established limits.

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

Sample Receipt

MSA
 COLLECTOR: *J. Seales*
 SAMPLING LOCATION: 2128 Sp. 3 Well (Creek)
 ICE CHEST NO.: *6205-247*
 SHIPPED TO: *Wade Sampling & Chemicals/Lab*

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 COMPANY CONTACT: *Wade Sampling & Chemicals*
 TELEPHONE NO.: 373-4247
 PROJECT COORDINATOR: *Medley, H*
 SAF NO.: *D11-001*
 ACTUAL SAMPLE DEPTH: *N/A*
 OFFSITE PROPERTY NO.: *N/A*

D11-001-001
 PRICE CODE: 9C
 AIR QUALITY
 METHOD OF SHIPMENT: *By Air*
 DATA TURNAROUND: 15 Days / 15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS
 (Refer to OSHA 29 CFR 1910.120 for HAZARDOUS WASTE REGULATIONS)
 111233
 ANALYSIS: PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268); Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se)); PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268); Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
B2B013	1	OS	1/20/11	1130	1X120ML BG	PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268);	1 yr 1 yr	Cool-HC
B2B013	↓	OS	1/20/11	1130	1X60ML GP	Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));	6 Months	None
B2B014	2	OS	1/20/11	1140	1X120ML BG	PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268);	1 yr 1 yr	Cool-HC
B2B014	↓	OS	1/20/11	1140	1X60ML GP	Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));	6 Months	None

SPECIAL HANDLING AND/OR STORAGE: *111233*
 SPECIAL INSTRUCTIONS: *MSA/Seales*

CHAIN OF POSSESSION
 RELINQUISHED BY/REMOVED FROM: *J. Seales* 1-20-11 1300
 RECEIVED BY/STORED IN: *KS Huber* 1-20-11 1300
 RELINQUISHED BY/REMOVED FROM: *KS Huber* 1-20-11 1430
 RECEIVED BY/STORED IN: *M. Ne/Son* 1-20-11 1430

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 COMPANY CONTACT: *Wade Sampling & Chemicals*
 TELEPHONE NO.: 373-4247
 PROJECT COORDINATOR: *Medley, H*
 SAF NO.: *D11-001*
 ACTUAL SAMPLE DEPTH: *N/A*
 OFFSITE PROPERTY NO.: *N/A*

D11-001-001
 PRICE CODE: 9C
 AIR QUALITY
 METHOD OF SHIPMENT: *By Air*
 DATA TURNAROUND: 15 Days / 15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS
 (Refer to OSHA 29 CFR 1910.120 for HAZARDOUS WASTE REGULATIONS)
 111233
 ANALYSIS: PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268); Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se)); PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268); Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
B2B013	1	OS	1/20/11	1130	1X120ML BG	PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268);	1 yr 1 yr	Cool-HC
B2B013	↓	OS	1/20/11	1130	1X60ML GP	Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));	6 Months	None
B2B014	2	OS	1/20/11	1140	1X120ML BG	PCBs - 8082 (A, 1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268);	1 yr 1 yr	Cool-HC
B2B014	↓	OS	1/20/11	1140	1X60ML GP	Trace Elements (CP) (S, 200.8 (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se));	6 Months	None

SPECIAL HANDLING AND/OR STORAGE: *111233*
 SPECIAL INSTRUCTIONS: *MSA/Seales*

Thursday, January 20, 2011 7:36:00 PM

Page 2 of 5

REVISED111233 -

Sample Receipt

Chain of Custody

MSA
COLLECTOR: *J. Scales*
SAMPLING LOCATION: 212B Spill Waste Tank Ctr
ICE CHEST NO: *SW5-247*
SHIPPED TO: Waste Sampling & Characterization

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
COMPANY CONTACT: 102 HILL, RM 373-4246
PROJECT COORDINATOR: HENLEY, MA
SAF NO.: D11-004
ACTUAL SAMPLE DEPTH: *N/A*
OFFSITE PROPERTY NO.: *N/A*

PHONE NO.: 373-4246
PRICE CODE: JC
AIR QUALITY
METHOD OF SHIPMENT: *SEALED*

DATE: 1/20/11
BILL OF LADING/AIR BILL NO.: *N/A*

DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11

DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11

DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11

DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11

DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11
DATE: 1/20/11

SAMPLE NO.	LAB ID	MATRIX	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
BZED10	3	OS	1/20/11	1030	1X250mL BG	PCBE-8082 (A-1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1262, A-1268)	1 Yr 1 Yr	Cool+AC
BZED10	↓	OS	1/20/11	1030	1X60mL G.P	Trace Elements (P,P,S - 200.8) (Complete) (Ag, As, Ba, Ca, Cr, Hg, Pb, Se)	6 Months	None
BZED10	4	OS	1/20/11	1100	1X120mL BG	PCBE-8082 (A-1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1262, A-1268)	1 Yr 1 Yr	Cool+AC
BZED10	↓	OS	1/20/11	1100	1X60mL G.P	Trace Elements (P,P,S - 200.8) (Complete) (Ag, As, Ba, Ca, Cr, Hg, Pb, Se)	6 Months	None

POSSIBLE SAMPLE HAZARDS/REMARKS
REGULATORY DATE LIMIT: not releasable per DOE Order 5400.5 (Rev. 12/93)

CHAIN OF POSSESSION	SIGN/PRINT NAMES	DATE/TIME	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	
<i>J. Scales</i> 1/20/11 1300	<i>KB Hulse</i> 1/20/11 1300		
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	
<i>KB Hulse</i> 1/20/11 1420	<i>M. Nelson</i> 1/20/11 1420		
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	
LABORATORY SECTION	TITLE	DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSED BY	DATE/TIME	

Thursday, January 20, 2011 7:36:00 PM

Page 3 of 5

REVISED111233 -

Sample Receipt

Chain of Custody

NSA
 COLLECTOR **J. Seales**
 SAMPLING LOCATION
 2128 Spur Double Shell Tank Car
 ICE CHEST NO.
GLWS-247
 SHIPPED TO
 Waste Sampling & Characterization

COMPANY CONTACT
 GCHEN, RW
 PROJECT DESIGNATION
 Paint samples from Rail Cars at 2128 Spur
 FIELD LOGBOOK NO.
 11-1-11
 OFFSITE PROPERTY NO.
 N/A

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 TELEPHONE NO.
 373-4346
 PROJECT COORDINATOR
 REDLEY, RA
 SAF NO.
 0211-004
 COA
 N/A
 ACTUAL SAMPLE DEPTH
 N/A
 PRICE CODE
 9C
 AIR QUALITY
 METHOD OF SHIPMENT
 GASC VEHICLE

D11-004-005
 PAGE 1 OF 1
 DATA
 TURNAROUND
 15 Days / 15 Days

BILL OF LADING/AIR BILL NO.
 N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 Regulations but are not releasable per DOE Order 5400.5 (1950.1952)

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	LAB ID	MATRIX	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
B76DM1	5	OS	1/20/11	1017	1X120mL BG	PCUS - R087 (A-1016, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268)	1 Yr/1 Yr	Cool+4C
B76DM1	↓	OS	1/20/11	1017	1X50-mL G/P	Trace Elements: ICP-MS - 200 B (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se)	6 Months	None

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
J. Seales	1-20-11 1300		KB Hulst	1-20-11 1300	
KB Hulst	1-20-11 1400		M. Nelson	1-20-11 1400	

LABORATORY SECTION
 RECEIVED BY
 TITLE

FINAL SAMPLE DISPOSITION
 DISPOSAL METHOD
 DATE/TIME

Thursday, January 20, 2011 7:36:00 PM
 Page 4 of 5

REVISED111233 -

Sample Receipt

Chain of Custody

MSA **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **PRICE CODE** **PAGE 1 OF 1**
COLLECTOR *J. Seales* **TELEPHONE NO.** **PROJECT COORDINATOR** **PRICE CODE** **9C** **DATA**
SAMPLING LOCATION **JOCHEM, RM** **HELDLY, HS** **AIR QUALITY** **15 Days / 15**
2185 SALT BRIDGE **SAF NO.** **D11-004** **Days**
ICE CHEST NO. **D11-004** **METHOD OF SHIPMENT**
GWS-247 **ACTUAL SAMPLE DEPTH** **COG** **N/A**
SHIPPED TO **OFFSITE PROPERTY NO.** **GILL OF LADING/AIR BILL NO.**
Waste Sampling & Characterization **N/A** **113**

PROJECT DESIGNATION **FIELD LOGBOOK NO.** **ACTUAL SAMPLE DEPTH** **COG** **N/A**
Point samples from Salt Brdg. / TAN 5247 **N/A**
NO. / TYPE **ANALYSIS**
CONTAINER(S)
1X120 ML QS **PCB-8082 (A-1221, A-1221, A-1232, A-1212, A-1238, A-1251, A-1260, F-1262, A-1268)**
1X60 ML GP **Trace Elements (Pb, Hg, 200.8 Composite) (A, G, B, C, D, Cr, Hg, Pb, Se)**

POSSIBLE SAMPLE HAZARDS/REMARKS
 Regulatory bucket not releasable per DOE Order 5403.5 (1990.1593)

LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO. / TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
33E0112	QS	1/20/11	0944	1X120 ML QS	PCB-8082 (A-1221, A-1221, A-1232, A-1212, A-1238, A-1251, A-1260, F-1262, A-1268)	1 hr, 1 hr	Cool-IC
33E0112	QS	1/20/11	0944	1X60 ML GP	Trace Elements (Pb, Hg, 200.8 Composite) (A, G, B, C, D, Cr, Hg, Pb, Se)	6 Months	None

CHAIN OF POSSESSION	SIGN/PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY: <i>J. Seales</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1300</i>
RELINQUISHED BY: <i>KB Huber</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1300</i>
RELINQUISHED BY: <i>KB Huber</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1430</i>
RELINQUISHED BY: <i>KB Huber</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1430</i>
RELINQUISHED BY: <i>KB Huber</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1430</i>
RELINQUISHED BY: <i>KB Huber</i>	RECEIVED BY/STORED IN: <i>KB Huber</i>	DATE/TIME: <i>1-20-11 1430</i>

LABORATORY SECTION	RECEIVED BY	DATE/TIME
FINAL SAMPLE DISPOSITION <td>DISPOSAL METHOD <td>DATE/TIME </td></td>	DISPOSAL METHOD <td>DATE/TIME </td>	DATE/TIME

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: BOS			DATA PACKAGE: VSR11-034		
VALIDATOR: Eyda Hergenreder		LAB: WSCF		DATE: 03-04-2011	
			SDG: WSCF111233		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082 X	SW-846 8081 (TCLP)		
SAMPLES/MATRIX Soil samples SDG WSCF111233: B2BDL3, B2BDL4, B2BDL9, B2BDM0, B2BDM1, B2BDM2					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

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

Comments:

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

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

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

Comments:

B2BDM0 surrogate recovery infractions: tetrachloro-m-xylene %R = 222%, decachlorobiphenyl %R = 224%

Aroclor-1254 parent sample concentration >4X the MS/MSD spike concentration. MS/MSD recoveries and RPD not applicable.

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

- Duplicate RPD values acceptable?..... Yes No N/A
- Duplicate results acceptable?..... Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A
- MS/MSD standards expired? (Levels D, E)..... Yes No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments:

aroclor-1254 MS/MSD RPD 42%

6. SYSTEM PERFORMANCE (Levels D and E)

- Chromatographic performance acceptable?..... Yes No N/A
- Positive results resolved acceptably?..... Yes No N/A

Comments:

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

7. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A

Sample holding times acceptable? Yes No N/A

Comments: None

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

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

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

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

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

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

Detection limits meet RDL? Yes No N/A

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

Comments:

All aroclors CRDL=20 ug/kg
 B2BDL3: aroclors -1016, -1232, -1242, -1248, -1260, -1262, -1268 MDL = 500000 ug/kg:
 -1221 MDL=900000 ug/kg
 B2BDL4: aroclors -1016, -1232, -1242, -1248, -1260, -1262, -1268 MDL = 400000 ug/kg:
 -1221 MDL=800000 ug/kg
 B2BDL9: aroclors -1016, -1232, -1242, -1248, -1254, -1260, -1262, -1268 MDL = 4000 ug/kg:
 -1221 MDL=7000 ug/kg
 B2BDM0: aroclors -1016, -1232, -1242, -1248, -1254, -1260, -1262, -1268 MDL = 400 ug/kg:
 -1221 MDL=700 ug/kg
 B2BDM1: aroclors -1016, -1232, -1242, -1248, -1254, -1260, -1262, -1268 MDL = 500 ug/kg:
 -1221 MDL=900 ug/kg
 B2BDM2: aroclors -1016, -1232, -1242, -1248, -1254, -1260, -1262, -1268 MDL = 400 ug/kg:
 -1221 MDL=700 ug/kg

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

9. SAMPLE CLEANUP (Levels D and E)

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

Comments:

Appendix 6

Additional Documentation Requested By Client

Quality Control Report

Group # WSCF111233

Attention Rod Jochen
 Department Organic, Semivolatiles

QC Batch 175108 Test PCBs by EPA SW-846 Method 8082
 Associated Samples 111233001, 111233002, 111233003, 111233004, 111233005, 111233006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	RPD Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
QC Sample #47402										
Aroclor-1016	12674-11-2	<500	<500	ug/kg					U	02/01/11
Aroclor-1221	11104-28-2	<1.E3	<1.E3	ug/kg					U	02/01/11
Aroclor-1232	11141-16-5	<500	<500	ug/kg					U	02/01/11
Aroclor-1242	53469-21-9	<500	<500	ug/kg					U	02/01/11
Aroclor-1248	12672-29-6	<500	<500	ug/kg					U	02/01/11
Aroclor-1254	11097-69-1	<500	<500	ug/kg					U	02/01/11
Aroclor-1260	11096-82-5	<500	<500	ug/kg					U	02/01/11
Aroclor-1262	37324-23-5	<500	<500	ug/kg					U	02/01/11
Aroclor-1268	11100-14-4	<500	<500	ug/kg					U	02/01/11
LCS										
QC Sample #47403										
Aroclor-1254	11097-69-1	10000	10000	ug/kg	103.8	75 - 128				02/02/11
MS										
QC Sample #47404										
Original 111233001										
Aroclor-1254	11097-69-1	3.7E6	2200000	ug/kg	27542.5	62 - 140			DNX	02/02/11
MSD										
QC Sample #47405										
Original 111233001										
Aroclor-1254	11097-69-1	3.7E6	180000	ug/kg	2063.4	62 - 140	41.70	30	* DNX	02/02/11
Paired 47404										

Quality Control Report

Group # WSCF111233

Attention Rod Jochen
Department Organic, Semivolatiles

QC Batch 175108 **Test** PCBs by EPA SW-846 Method 8082
Associated Samples 111233001, 111233002, 111233003, 111233004, 111233005, 111233006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE				Sample #111233001						
Tetrachloro-m-xylene	877-09-8				95.3	60 - 140				02/02/11
Decachlorobiphenyl	2051-24-3				97.5	60 - 140				02/02/11
SAMPLE				Sample #111233002						
Tetrachloro-m-xylene	877-09-8				99.5	60 - 140				02/02/11
Decachlorobiphenyl	2051-24-3				104	60 - 140				02/02/11
SAMPLE				Sample #111233003						
Tetrachloro-m-xylene	877-09-8				145	60 - 140			X	02/01/11
Decachlorobiphenyl	2051-24-3				126	60 - 140				02/01/11
SAMPLE				Sample #111233004						
Tetrachloro-m-xylene	877-09-8				222.2	60 - 140			X	02/02/11
Decachlorobiphenyl	2051-24-3				224.2	60 - 140			X	02/02/11
SAMPLE				Sample #111233005						
Tetrachloro-m-xylene	877-09-8				117.2	60 - 140				02/02/11
Decachlorobiphenyl	2051-24-3				113	60 - 140				02/02/11
SAMPLE				Sample #111233006						

Quality Control Report

Group # WSCF111233

Attention Rod Jochen
 Department Organic, Semivolatiles

Analyte	CAS #	Original Found	QC Found	Units	% RecovLimits	RPD	RPD Limit	RQ	Analyzed
Tetrachloro-m-xylene	877-09-8				128	60 - 140			02/02/11
Decachlorobiphenyl	2051-24-3				121.9	60 - 140			02/02/11
BLANK				QC Sample #47402					
Tetrachloro-m-xylene	877-09-8				136.9	60 - 140			02/01/11
Decachlorobiphenyl	2051-24-3				149.4	60 - 140		X	02/01/11
LCS				QC Sample #47403					
Tetrachloro-m-xylene	877-09-8				101.8	60 - 124			02/02/11
Decachlorobiphenyl	2051-24-3				105.2	72 - 125			02/02/11
MS				QC Sample #47404					
Tetrachloro-m-xylene	877-09-8			Original 111233001	99.5	51 - 120			02/02/11
Decachlorobiphenyl	2051-24-3				104.3	66 - 126			02/02/11
MSD				QC Sample #47405					
Tetrachloro-m-xylene	877-09-8			Original 111233001	105.8	51 - 120	14.30	Paired 47404	02/02/11
Decachlorobiphenyl	2051-24-3				111.5	66 - 126	14.90		02/02/11

Date: 04 March 2011
 To: CH2M Hill (technical representative)
 From: Analytical Quality Associates, Inc.
 Project: BOS
 Subject: Inorganics - Sample Data Group (SDG) WSCF111233

INTRODUCTION

This memorandum presents the results of data validation for SDG WSCF111233 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
B2BDL3	01/20/11	Soil	C	200.8
B2BDL4	01/20/11	Soil	C	200.8
B2BDL9	01/20/11	Soil	C	200.8
B2BDM0	01/20/11	Soil	C	200.8
B2BDM1	01/20/11	Soil	C	200.8
B2BDM2	01/20/11	Soil	C	200.8

Data validation was conducted in accordance with the CHPRC validation statement of work and the 212-R Railcar Characterization Sampling and Analysis Plan, DOE/RL-2010-112, Rev. 0 (SAP). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirement for ICP metals are analysis within 180 days of sample collection, and the holding time requirement for mercury is analysis within 28 days of sample collection. There are no specific sample preservation requirements.

The samples were analyzed within the prescribed holding times.

- **Blanks**

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

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample and ICP-AES interference check sample results. According to the SAP, the laboratory control sample accuracy limits are 70% to 130%. The matrix spike sample accuracy limits are ones specified by the DV procedure. The interference check sample limits are ones specified by the DV procedure.

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

All MS/MSD recoveries were acceptable.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

ICP-AES Interference Check Samples (ICSs)

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

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, field split sample results, and ICP serial dilution results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are $\pm 30\%$. The serial dilution limits are ones specified by the DV procedure.

MS/MSD Samples

All MS/MSD RPD values were acceptable.

Field Duplicate Samples

No field duplicates were submitted for validation.

Field Split Samples

No field splits were submitted for validation.

ICP Serial Dilution Samples

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

- **ICP-MS Internal Standards**

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

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

- **Detection Limits**

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

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

- **Completeness**

SDG WSCF111233 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-2010-112, Rev. 0, *212-R Railing Characterization Sampling and Analysis Plan*, January 2011.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

Appendix 2
Summary of Data Qualification

Inorganic Data Qualification Summary			
SDG: WSCF111233	Reviewer: AQA	Project: BOS	Page 1 of 1
Analyte(s)	Qualifier	Samples Affected	Reason
Inorganics	None	N/A	N/A

Comments: None

Appendix 3

Annotated Laboratory Reports

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
Department Inorganic

Sample # 111233001
SAF# D11-004
Sample ID B2BDL3

Matrix SOIL
Sampled 01/20/11
Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412	B	0.615		mg/kg	1	0.092	0.92	02/01/11
Barium	7440-39-3	LA-505-412		64.9		mg/kg	1	0.18	1.8	02/01/11
Cadmium	7440-43-9	LA-505-412		33.8		mg/kg	1	0.092	0.92	02/01/11
Chromium	7440-47-3	LA-505-412		3780		mg/kg	1	0.46	4.6	02/01/11
Lead	7439-92-1	LA-505-412		66200		mg/kg	1	0.092	0.92	02/01/11
Mercury	7439-97-6	LA-505-412	U	<0.046		mg/kg	1	0.046	0.18	02/01/11
Arsenic	7440-38-2	LA-505-412		4.71		mg/kg	1	0.37	3.7	02/01/11
Selenium	7782-49-2	LA-505-412	B	1.53		mg/kg	1	0.28	2.8	02/01/11

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

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

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

REVISED111233 -

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
Department Inorganic

Sample # 111233002
SAF# D11-004
Sample ID B2BDL4
Matrix SOIL
Sampled 01/20/11
Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412	U	<0.095		mg/kg	1	0.095	0.95	02/01/11
Barium	7440-39-3	LA-505-412		179		mg/kg	1	0.19	1.9	02/01/11
Cadmium	7440-43-9	LA-505-412		26.8		mg/kg	1	0.095	0.95	02/01/11
Chromium	7440-47-3	LA-505-412		6580		mg/kg	1	0.48	4.8	02/01/11
Lead	7439-92-1	LA-505-412		634		mg/kg	1	0.095	0.95	02/01/11
Mercury	7439-97-6	LA-505-412	B	0.179		mg/kg	1	0.048	0.19	02/01/11
Arsenic	7440-38-2	LA-505-412	B	2.38		mg/kg	1	0.38	3.8	02/01/11
Selenium	7782-49-2	LA-505-412	U	<0.29		mg/kg	1	0.29	2.9	02/01/11

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

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

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

REVISED111233 -

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
Department Inorganic

Sample # 111233003
SAF# D11-004
Sample ID B2BDL9
Matrix SOIL
Sampled 01/20/11
Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412	U	<0.093		mg/kg	1	0.093	0.93	02/01/11
Barium	7440-39-3	LA-505-412		24.3		mg/kg	1	0.19	1.9	02/01/11
Cadmium	7440-43-9	LA-505-412	U	<0.093		mg/kg	1	0.093	0.93	02/01/11
Chromium	7440-47-3	LA-505-412		466		mg/kg	1	0.47	4.7	02/01/11
Lead	7439-92-1	LA-505-412		266		mg/kg	1	0.093	0.93	02/01/11
Mercury	7439-97-6	LA-505-412	U	<0.047		mg/kg	1	0.047	0.19	02/01/11
Arsenic	7440-38-2	LA-505-412	U	<0.37		mg/kg	1	0.37	3.7	02/01/11
Selenium	7782-49-2	LA-505-412	U	<0.28		mg/kg	1	0.28	2.8	02/01/11

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

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

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

REVISED111233 -

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
Department Inorganic

Sample # 111233004
SAF# D11-004
Sample ID B2BDM0
Matrix SOIL
Sampled 01/20/11
Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412		2.77		mg/kg	1	0.095	0.95	02/01/11
Barium	7440-39-3	LA-505-412		1260		mg/kg	1	0.19	1.9	02/01/11
Cadmium	7440-43-9	LA-505-412		1.30		mg/kg	1	0.095	0.95	02/01/11
Chromium	7440-47-3	LA-505-412		903		mg/kg	1	0.48	4.8	02/01/11
Lead	7439-92-1	LA-505-412		3420		mg/kg	1	0.095	0.95	02/01/11
Mercury	7439-97-6	LA-505-412	B	0.119		mg/kg	1	0.048	0.19	02/01/11
Arsenic	7440-38-2	LA-505-412		27.0		mg/kg	1	0.38	3.8	02/01/11
Selenium	7782-49-2	LA-505-412	B	0.786		mg/kg	1	0.29	2.9	02/01/11

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

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

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

REVISED111233 -

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
Department Inorganic

Sample # 111233005
SAF# D11-004
Sample ID B2BDM1

Matrix SOIL
Sampled 01/20/11
Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412	U	<0.094		mg/kg	1	0.094	0.94	02/01/11
Barium	7440-39-3	LA-505-412		2340		mg/kg	1	0.19	1.9	02/01/11
Cadmium	7440-43-9	LA-505-412	B	0.425		mg/kg	1	0.094	0.94	02/01/11
Chromium	7440-47-3	LA-505-412		245		mg/kg	1	0.47	4.7	02/01/11
Lead	7439-92-1	LA-505-412		9.15		mg/kg	1	0.094	0.94	02/01/11
Mercury	7439-97-6	LA-505-412	B	0.0536		mg/kg	1	0.047	0.19	02/01/11
Arsenic	7440-38-2	LA-505-412		6.89		mg/kg	1	0.38	3.8	02/01/11
Selenium	7782-49-2	LA-505-412	U	<0.28		mg/kg	1	0.28	2.8	02/01/11

01/31/11

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

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

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

REVISED111233 -

WSCF Analytical Results Report

Group # WSCF111233

Attention Rod Jochen
 Department Inorganic

Sample # 111233006 Matrix SOIL
 SAF# D11-004 Sampled 01/20/11
 Sample ID B2BDM2 Received 01/20/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										
ICP-MS										
Silver	7440-22-4	LA-505-412	B	0.759		mg/kg	1	0.093	0.93	02/01/11
Barium	7440-39-3	LA-505-412		420		mg/kg	1	0.19	1.9	02/01/11
Cadmium	7440-43-9	LA-505-412		6.55		mg/kg	1	0.093	0.93	02/01/11
Chromium	7440-47-3	LA-505-412		5980		mg/kg	1	0.47	4.7	02/01/11
Lead	7439-92-1	LA-505-412		57400		mg/kg	1	0.093	0.93	02/01/11
Mercury	7439-97-6	LA-505-412	B	0.181		mg/kg	1	0.047	0.19	02/01/11
Arsenic	7440-38-2	LA-505-412		19.1		mg/kg	1	0.37	3.7	02/01/11
Selenium	7782-49-2	LA-505-412	U	<0.28		mg/kg	1	0.28	2.8	02/01/11

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

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

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

REVISED111233 -

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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.

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

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

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

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

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

- All applicable QC controls are within the established limits.

Narrative

Attachment 2
Narrative
WSCF111233

Organic Comments

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

- B2BDL9 (111233003) did not meet the acceptance limits for surrogate Tetrachloro-m-xylene and B2BDM0 did not meet the acceptance limits for surrogate Tetrachloro-m-xylene and Decachlorobiphenyl. QC Sample blank #47402 did not meet the acceptance limits for surrogate Tetrachloro-m-xylene. Sample results were not flagged. The quality control report was flagged for surrogate recovery failure.
- Aroclor 1254 Matrix Spike and/or Matrix Spike Duplicate recoveries are outside established laboratory limits. Affected sample results in this batch were “N” flagged.
- All other applicable QC controls are within the established limits.

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

Sample Receipt

Chain of Custody

MSA
COLLECTOR: *J. Scales*
SAMPLING LOCATION: 212B Spill Waste Tank Ctr
ICE CHEST NO: *SW5-247*
SHIPPED TO: Waste Sampling & Characterization

COMPANY CONTACT: 102781, RM
PROJECT COORDINATOR: HENLEY, MA
SAF NO.: D11-004
ACTUAL SAMPLE DEPTH: *N/A*
OFFSITE PROPERTY NO.: *N/A*

PHONE NO.: 373-4246
PRICE CODE: JC
AIR QUALITY
METHOD OF SHIPMENT: *SEALED*

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
BILL OF LADING/AIR BILL NO.: *N/A*

PROJECT DESIGNATION: Plant samples from Ref Carbon Filter Spill
FIELD LOGBOOK NO.: *1474-057 H*

POSSIBLE SAMPLE HAZARDS/REMARKS: *REGULATORY DATE NOT RELEASABLE PER DOE ORDER 5400.5 (10/10/93)*

SPECIAL HANDLING AND/OR STORAGE: *N/A*

MATRIX: *S*
S=SOIL
W=WATER

SAMPLE NO.	LAB ID	MATRIX	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
BZED10	<i>3</i>	OS	<i>1/20/11</i>	<i>1030</i>	1X250mL BG	PCBE-8082 (A-1016, A-1221, A-1232, A-1242, A-1248, A-1251, A-1260, A-1262, A-1268)	1 Yr 1 Yr	Cool+AC
BZED10	<i>4</i>	OS	<i>1/20/11</i>	<i>1030</i>	1X60mL G.P	Trace Elements (P,P'S - 200.8) (Ag, As, Ba, Ca, Cr, Hg, Pb, Se)	6 Months	None
BZED10	<i>4</i>	OS	<i>1/20/11</i>	<i>1100</i>	1X120mL BG	PCBE-8082 (A-1016, A-1221, A-1232, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268)	1 Yr 1 Yr	Cool+AC
BZED10	<i>4</i>	OS	<i>1/20/11</i>	<i>1100</i>	1X60mL G.P	Trace Elements (P,P'S - 200.8) (Complete) (Ag, As, Ba, Ca, Cr, Hg, Pb, Se)	6 Months	None

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM: *J. Scales* 1-20-11 1300
RECEIVED BY/STORED IN: *KB Hulse* 1-20-11 1300

RELINQUISHED BY/REMOVED FROM: *KB Hulse* 1-20-11 1420
RECEIVED BY/STORED IN: *M. NELSON* 1/20/11 1430

RELINQUISHED BY/REMOVED FROM: _____
RECEIVED BY/STORED IN: _____

LABORATORY SECTION: _____
RECEIVED BY: _____

FINAL SAMPLE DISPOSITION: _____
DISPOSAL METHOD: _____
DISPOSED BY: _____

DATE/TIME: _____
TITLE: _____

Thursday, January 20, 2011 7:36:00 PM

Page 3 of 5

REVISED111233 -

Sample Receipt

Chain of Custody

NSA
 COLLECTOR **J. Seales**
 SAMPLING LOCATION
 2128 Spur Double Shell Tank Car
 ICE CHEST NO.
GLWS-247
 SHIPPED TO
 Waste Sampling & Characterization

COMPANY CONTACT
 GCHEN, RW
 PROJECT DESIGNATION
 Paint samples from Rail Cars at 2128 Spur
 FIELD LOGBOOK NO.
 11-1-11
 OFFSITE PROPERTY NO.
 N/A

TELEPHONE NO.
 373-4346
 PROJECT COORDINATOR
 REDLEY, RA
 SAF NO.
 021-004
 COA
N/A
 BILL OF LADING/AIR BILL NO.
 N/A

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 PRICE CODE
 9C
 AIR QUALITY
 METHOD OF SHIPMENT
 GASC VEHICLE

ACTUAL SAMPLE DEPTH
N/A

PRICE CODE
 9C
 AIR QUALITY
 METHOD OF SHIPMENT
 GASC VEHICLE

DATA
 TURNAROUND
 15 Days / 15 Days

PAGE 1 OF 1

POSSIBLE SAMPLE HAZARDS/REMARKS
 Regulations but are not releasable per DOE Order 5400.5 (1950.1952)

ANALYSIS

HOLDING TIME

PRESERVATION

PCUS - R087 (A-1016, A-4321, A-1242, A-1248, A-1254, A-1260, A-1262, A-1268)
 Trace Elements (CPMS - 200 B (Complete) (Ag, As, Ba, Cd, Cr, Hg, Pb, Se))

1X120mL BG
 1X50mL GP

NO./TYPE CONTAINER(S)

DATE TIME

DATE TIME

DATE TIME

LAB ID

MATRIX

SAMPLE DATE

SAMPLE TIME

DATE TIME

DATE TIME

DATE TIME

DATE TIME

DATE TIME

DATE TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

DATE/TIME

Thursday, January 20, 2011 7:36:00 PM

Page 4 of 5

REVISED111233 -

Appendix 5

Data Validation Supporting Documentation

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: BOS			DATA PACKAGE: VSR11-034		
VALIDATOR: Eyda Hergenreder		LAB: WSCF		DATE: 03-04-2011	
			SDG: WSCF111233		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg		EPA 200.8 X	
SAMPLES/MATRIX Soil samples WSCF111233: B2BDL3, B2BDL4, B2BDL9, B2BDM0, B2BDM1, B2BDM2					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

Initial calibrations performed on all instruments?	Yes	No	N/A
Initial calibrations acceptable?	Yes	No	N/A
ICP interference checks acceptable?	Yes	No	N/A
ICV and CCV checks performed on all instruments?	Yes	No	N/A
ICV and CCV checks acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Calculation check acceptable?	Yes	No	N/A

Comments:

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

ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes	No	N/A
ICB and CCB results acceptable? (Levels D, E)	Yes	No	N/A
Laboratory blanks analyzed?	Yes	No	N/A
Laboratory blank results acceptable?	Yes	No	N/A
Field blanks analyzed? (Levels C, D, E)	Yes	No	N/A
Field blank results acceptable? (Levels C, D, E)	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

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

- Duplicate RPD values acceptable?..... Yes No N/A
- Duplicate results acceptable?..... Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A
- MS/MSD standards expired? (Levels D, E)..... Yes No N/A
- Field duplicate RPD values acceptable?..... Yes No N/A
- Field split RPD values acceptable?..... Yes No N/A
- Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

6. ICP QUALITY CONTROL (Levels D and E)

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

Comments:

7. HOLDING TIMES (all levels)

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

Comments: None

Data Validation for Chemical Analyses

Published Date: 08/16/10

Effective Date: 08/16/10

8. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: None

Appendix 6

Additional Documentation Requested By Client

Quality Control Report

Group # WSCF111233

Attention Rod Jochen
 Department Inorganic

QC Batch 175416 Test ICP-2008 MS All possible metal
 Associated Samples 111233001, 111233002, 111233003, 111233004, 111233005, 111233006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	RPD Limits	RPD	RQ	Analyzed
LCS									
QC Sample #47833									
Silver	7440-22-4	111		mg/kg	113.7	83 - 127			02/01/11
Barium	7440-39-3	327		mg/kg	105.7	78 - 118			02/01/11
Cadmium	7440-43-9	79.3		mg/kg	122.9	76 - 129			02/01/11
Chromium	7440-47-3	77.8		mg/kg	110	68 - 119			02/01/11
Lead	7439-92-1	143		mg/kg	113.1	79 - 124			02/01/11
Mercury	7439-97-6	8.56		mg/kg	106.3	69 - 124			02/01/11
Arsenic	7440-38-2	139		mg/kg	108.3	79 - 125			02/01/11
Selenium	7782-49-2	178		mg/kg	113.9	82 - 133			02/01/11
MS									
QC Sample #47834									
Original 111325001									
Silver	7440-22-4	92.5		mg/kg	96.8	70 - 130			02/01/11
Barium	7440-39-3	99.8		mg/kg	104.4	70 - 130			02/01/11
Cadmium	7440-43-9	93.9		mg/kg	98.3	70 - 130			02/01/11
Chromium	7440-47-3	89.1		mg/kg	93.3	70 - 130			02/01/11
Lead	7439-92-1	93.1		mg/kg	97.5	70 - 130			02/01/11
Mercury	7439-97-6	1.92		mg/kg	100.5	70 - 130			02/01/11
Arsenic	7440-38-2	92.3		mg/kg	96.7	70 - 130			02/01/11
Selenium	7782-49-2	90.0		mg/kg	94.2	70 - 130			02/01/11

REVISED111233 -

Quality Control Report

Attention Rod Jochen
 Department Inorganic
 Group # WSCF111233

Analyte	CAS #	Original Found	QC Found	Units	% RecovLimits	RPD	RPD Limit	RQ	Analyzed
MSD									
		QC Sample #47835							
		Original 111325001						Paired 47834	
Silver	7440-22-4	93.6		mg/kg	97.9	70 - 130	1.30	30	02/01/11
Barium	7440-39-3	104		mg/kg	108.5	70 - 130	2.10	30	02/01/11
Cadmium	7440-43-9	94.2		mg/kg	98.5	70 - 130	0.40	30	02/01/11
Chromium	7440-47-3	95.4		mg/kg	99.8	70 - 130	6.20	30	02/01/11
Lead	7439-92-1	96.0		mg/kg	100.4	70 - 130	2.90	30	02/01/11
Mercury	7439-97-6	1.97		mg/kg	103	70 - 130	2.60	30	02/01/11
Arsenic	7440-38-2	95.2		mg/kg	99.6	70 - 130	2.90	30	02/01/11
Selenium	7782-49-2	94.7		mg/kg	99	70 - 130	5.00	30	02/01/11
BLANK									
		QC Sample #47832							
Silver	7440-22-4	<0.10		ug/L				U	02/01/11
Barium	7440-39-3	<0.20		ug/L				U	02/01/11
Cadmium	7440-43-9	<0.10		ug/L				U	02/01/11
Chromium	7440-47-3	<0.50		ug/L				U	02/01/11
Lead	7439-92-1	<0.10		ug/L				U	02/01/11
Mercury	7439-97-6	<0.050		ug/L				U	02/01/11
Arsenic	7440-38-2	<0.40		ug/L				U	02/01/11
Selenium	7782-49-2	<0.30		ug/L				U	02/01/11