



LABORATORY DATA CONSULTANTS, INC.

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December 13, 2004

Mr. Bruce Lewis
ERM-West
2525 Natomas Park Drive, Suite 350
Sacramento, CA 95833

SUBJECT: Validation of Data for Surface Soil Samples Collected as Part of the Aerojet
PGOU Soils RI

Dear Mr. Lewis,

Enclosed are the final validation reports for the analysis listed below.

SDG #
P411441

Analysis
Arsenic, Chromium and Lead by EPA 6020
Polychlorinated Biphenyls by EPA 8082

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999,
- Quality Assurance Project Plan, Aerojet Superfund Site, Aerojet-General Corporation, 6 August 2004

Please feel free to contact us if you have any questions.

Sincerely,

Nanny Estrada
Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet PGOU RI/FS
Collection Date: November 18, 2004
LDC Report Date: December 13, 2004
Matrix: Soil
Parameters: Arsenic, Chromium and Lead
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P411441

Sample Identification

C4-SNS08-0
C4-SNS09-0
C4-SNS10-0
C4-SNS07-2
C4-SNS02-2
C4-SNS02-2D
C15-SS09-0
C15-SS10-0
C15-SS11-0
11D-SNS10-0
10D-SNS11-0
10D-SNS21-0

Introduction

This data review covers twelve soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for arsenic, chromium and lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

An ICS was analyzed at the beginning of the analytical run, but no ICS was analyzed at the end of the analytical run.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
C4-SNS08-0 MS/MSD (C15-SS09-0, C15-SS10-0, and C15-SS11-0)	Chromium	71 (80-120)	91 (80-120)	14 (20)	J detects, UJ nondetects	A

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

Samples C4-SNS02-2 and C4-SNS02-2D were identified as field duplicates. No metals were detected in the samples with the following exceptions:

Analyte	Concentration (ppbv)		RPD
	C4-SNS02-2	C4-SNS02-2D	
Lead	58	6.7	159

No field duplicate precision criteria were specified for EPA Method 6020. Therefore, no data are qualified based on this finding.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet PGOU RI/FS

Arsenic, Chromium and Lead - Data Qualification Summary - SDG P411441

SDG	Sample	Analyte	Flag	A or P	Reason
P411441	C15-SS09-0, C15-SS10-0, and C15-SS11-0	Chromium	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits

Aerojet PGOU RI/FS

Arsenic, Chromium and Lead - Laboratory Blank Data Qualification Summary - SDG P411441

No Sample Data Qualified in this SDG



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Environmental Resources Management 2525 Natomas Park Drive, Suite 350 Sacramento CA, 95833	Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis	P411441 Reported: 11/23/04 17:09
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Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C4-SNS08-0 (P411441-01) Soil Sampled: 11/18/04 09:07 Received: 11/19/04 10:00									
Lead	15	0.49	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C4-SNS09-0 (P411441-02) Soil Sampled: 11/18/04 09:12 Received: 11/19/04 10:00									
Lead	16	0.45	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C4-SNS10-0 (P411441-03) Soil Sampled: 11/18/04 09:21 Received: 11/19/04 10:00									
Lead	9.3	0.36	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C4-SNS07-2 (P411441-04) Soil Sampled: 11/18/04 09:35 Received: 11/19/04 10:00									
Lead	11	0.45	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C4-SNS02-2 (P411441-05) Soil Sampled: 11/18/04 09:51 Received: 11/19/04 10:00									
Lead	58	0.48	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C4-SNS02-2D (P411441-06) Soil Sampled: 11/18/04 09:52 Received: 11/19/04 10:00									
Lead	6.7	0.48	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
C15-SS09-0 (P411441-07) Soil Sampled: 11/18/04 10:58 Received: 11/19/04 10:00									
Chromium	40	0.86	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	J
C15-SS10-0 (P411441-08) Soil Sampled: 11/18/04 10:56 Received: 11/19/04 10:00									
Chromium	45	0.77	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	J
C15-SS11-0 (P411441-09) Soil Sampled: 11/18/04 10:54 Received: 11/19/04 10:00									
Chromium	45	0.86	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	J

DV
Qual.



**Sequoia
Analytical**

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**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11D-SNS10-0 (P411441-10) Soil Sampled: 11/18/04 11:16 Received: 11/19/04 10:00									
Lead	87	0.41	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
10D-SNS11-0 (P411441-11) Soil Sampled: 11/18/04 11:29 Received: 11/19/04 10:00									
Arsenic	4.3	0.88	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	
10D-SNS21-0 (P411441-12) Soil Sampled: 11/18/04 11:36 Received: 11/19/04 10:00									
Arsenic	4.4	0.82	mg/kg	1	4110536	11/22/04	11/22/04	EPA 6020	

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet PGOU RI/FS
Collection Date: November 18, 2004
LDC Report Date: December 13, 2004
Matrix: Soil
Parameters: Polychlorinated Biphenyls
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P411441

Sample Identification

10D-SNS31-0
10D-SNS31-2
10D-SNS31-0D

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls (PCBs).

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies (COCs) were reviewed for documentation of cooler temperatures. All cooler temperature criteria were met.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
11/23/04	ECDF4828	ECD	Tetrachlorometaxylene (TCMX)	15.8 (15)	All	None specified	A

No qualification was specified for surrogate compounds outside of calibration %D limits. Therefore, no sample data are qualified due to this finding.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Sample 10D-SNS31-0 was used for the MS/MSD analysis. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

Samples 10D-SNS31-0 and 10D-SNS31-0D were identified as field duplicates in this SDG. No PCBs were detected in the samples with the following exceptions:

Analyte	Concentration (ppbv)		RPD (Limit)
	10D-SNS31-0	10D-SNS31-0D	
PCB-1260	170	94	57.6 (20)

Qualification of field duplicate precision outliers was not specified. Therefore, no data are qualified based on this finding.

XV. Field Blanks

There were no samples identified as field blanks in this SDG. Therefore, this parameter was not evaluated.

Aerojet PGOU RI/FS
Polychlorinated Biphenyls - Data Qualification Summary - SDG P411441

No Sample Data Qualified in this SDG

Aerojet PGOU RI/FS
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG P411441

No Sample Data Qualified in this SDG



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Polychlorinated Biphenyls by EPA Method 8082

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SNS31-0 (P411441-13) Soil Sampled: 11/18/04 11:55 Received: 11/19/04 10:00 C-01									
PCB-1016	ND	33	ug/kg	1	4110587	11/22/04	11/23/04	EPA 8082	
PCB-1221	ND	33	"	"	"	"	"	"	
PCB-1232	ND	33	"	"	"	"	"	"	
PCB-1242	ND	33	"	"	"	"	"	"	
PCB-1248	ND	33	"	"	"	"	"	"	
PCB-1254	ND	33	"	"	"	"	"	"	
PCB-1260	170	33	"	"	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl</i>		86 %	46-115	"	"	"	"	"	
10D-SNS31-2 (P411441-14) Soil Sampled: 11/18/04 12:05 Received: 11/19/04 10:00 C-01									
PCB-1016	ND	33	ug/kg	1	4110587	11/22/04	11/23/04	EPA 8082	
PCB-1221	ND	33	"	"	"	"	"	"	
PCB-1232	ND	33	"	"	"	"	"	"	
PCB-1242	ND	33	"	"	"	"	"	"	
PCB-1248	ND	33	"	"	"	"	"	"	
PCB-1254	ND	33	"	"	"	"	"	"	
PCB-1260	ND	33	"	"	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl</i>		86 %	46-115	"	"	"	"	"	
10D-SNS31-0D (P411441-15) Soil Sampled: 11/18/04 11:56 Received: 11/19/04 10:00 C-01									
PCB-1016	ND	33	ug/kg	1	4110587	11/22/04	11/23/04	EPA 8082	
PCB-1221	ND	33	"	"	"	"	"	"	
PCB-1232	ND	33	"	"	"	"	"	"	
PCB-1242	ND	33	"	"	"	"	"	"	
PCB-1248	ND	33	"	"	"	"	"	"	
PCB-1254	ND	33	"	"	"	"	"	"	
PCB-1260	94	33	"	"	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl</i>		85 %	46-115	"	"	"	"	"	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

NE 12/13/04