LABORATORY DATA CONSULTANTS, INC.
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ERM - West
2525 Natomas Park Dr., Suite 350
Sacramento, CA 95833
ATTN: Mr. Bruce Lewis

May 1, 2006

SUBJECT: Aerojet Site PGOU Data Validation

Dear Mr. Lewis,

Enclosed are the final validation reports for the fractions listed below. The SDG was received on April 28, 2006.

LDC Project # 14918:

SDG #	**Fraction**
See Attachment 1	Selected Metals and Chromium VI

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994

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

Sincerely,

Calvin Tanaka
Principal Chemist

cc: Jill Henes, LDC Inc.

Attachment 1

LDC#14918 (ERM - West / Aerojet - Site PGOU)

LDC	SDG#	DATE REC'D	DATE DUE	Metals (6010/6020/7741)		Metals (6010/6020/7741		Cr VI (7199)		Cr VI (7199)																									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	S601116	04/18/06	05/02/06	0	15	-	-	0	15	-	-																								
A	S601116	04/18/06	05/02/06	-	-	0	2	-	-	0	2																								
Total	B/SC			0	15	0	2	0	15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34

Shaded cells indicate Full review (all other cells are Cursory review). These sample counts do not include MS/MSD, DL, RE and DUPs

Aerojet Site PGOU
Data Validation Reports
LDC# 0604-02

Selected Metals

LDC Report# 0604-02A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Aerojet PGOU
Collection Date:	January 5, 2006
LDC Report Date:	May 1, 2006
Matrix:	Soil
Parameters:	Selected Metals
Validation Level:	EPA Level III & IV
Laboratory:	Sequoia/Del Mar - Irvine
Sample Delivery Group (SDG):	S601116

Sample Identification

C15-SS22-0	C15-SS15-0**
C15-SS22D-0	C15-SS12-0
C15-SS25-0**	C15-SS20-0
C15-SS26-0	C15-SS17-0
C15-SS24-0	C15-SS17D-0
C15-SS21-0	C15-SS23-0
C15-SS18-0	C15-SS16-0
C15-SS13-0	C15-SS19-0
C15-SS14-0	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 17 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010, 6020, and 7471A for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

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 XIII.

Samples indicated by a double asterisk on the front cover underwent an EPA Level IV review. An EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is 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 with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
6A10109-BLK1	Iron Magnesium	4.82 mg/kg 1.60 mg/kg	All samples in the SDG
6A10111-BLK1	Zinc	1.04 mg/kg	All samples in the SDG

Sample concentrations were compared to concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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
C15-SS14-0 (All samples in SDG)	Al	3800 (75-125)	11000 (75-125)	22 (20)	None	A
	Fe	1000 (75-125)	3400 (75-125)	4 (20)		
	Mg	44 (75-125)	104 (75-125)	4 (20)		
	Mn	184 (75-125)	120 (75-125)	5 (20)		
	Ti	236 (75-125)	218 (75-125)	1 (20)		
C15-SS14-0 (All samples in SDG)	Sb	50 (75-125)	43 (75-125)	15 (20)	J detects	A
	Ba	74 (75-125)	78 (75-125)	1 (20)	UJ non-detects	
	K	72 (75-125)	78 (75-125)	1 (20)		
	Mo	75 (75-125)	72 (75-125)	4 (20)		
	Se	63 (75-125)	67 (75-125)	6 (20)		
	V	78 (75-125)	70 (75-125)	3 (20)		

Results for Al, Fe, Mg, Mn, and Ti were not qualified as the analyte concentration in the sample were greater than four times the spike concentration.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were not performed. Therefore, this parameter was not evaluated.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All ICPMS internal standard recoveries were within QC limits.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG. Therefore, this parameter was not evaluated.

X. ICP Serial Dilution

ICP serial dilution analysis was not performed by the laboratory. Therefore, this parameter was not evaluated.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

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

XIII. Field Duplicates

Samples C15-SS22-0 and C15-SS22D-0 and samples C15-SS17-0 and C15-SS17D-0 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/kg)		RPD
	C15-SS22-0	C15-SS22D-0	
Aluminum	14,000	14,000	0.0
Arsenic	7.1	7.2	1.4
Barium	170	170	0.0
Beryllium	0.74	0.70	5.6
Boron	9.0	8.0	12
Cadmium	0.22	0.18	20
Calcium	2,400	2,300	4.3
Chromium	56	58	3.5
Cobalt	17	19	11
Copper	39	42	7.4
Iron	31,000	27,000	14
Lead	15	15	0.0
Magnesium	4,300	4,500	4.5
Manganese	790	700	12
Mercury	0.095	0.092	3.2

Analyte	Concentration (mg/kg)		RPD
	C15-SS22-0	C15-SS22D-0	
Molybdenum	0.46	0.40	14
Nickel	32	31	3.2
Potassium	2,100	2,300	9.1
Selenium	0.39	0.21	60
Sodium	47	57	19
Thallium	0.16	0.15	6.5
Titanium	630	690	9.1
Vanadium	94	94	0.0
Zinc	46	49	6.3

Analyte	Concentration (mg/kg)		RPD
	C15-SS17-0	C15-SS17D-0	
Aluminum	20,000	14,000	35
Antimony	1.6	0.90	56
Arsenic	6.7	6.0	11
Barium	200	160	22
Beryllium	0.80	0.70	13
Boron	9.0	6.9	26
Cadmium	0.12	0.23	63
Calcium	2,100	2,300	9.1
Chromium	74	55	29

Analyte	Concentration (mg/kg)		RPD
	C15-SS17-0	C15-SS17D-0	
Cobalt	19	18	5.4
Copper	46	39	16
Iron	35,000	27,000	26
Lead	11	13	17
Magnesium	6,100	4,900	22
Manganese	570	700	20
Mercury	0.093	0.093	0.0
Molybdenum	ND	0.34	200
Nickel	37	29	24
Potassium	3,400	3,100	9.2
Selenium	0.32	0.26	21
Sodium	46	45	2.2
Thallium	0.20	0.16	22
Titanium	890	680	27
Vanadium	110	98	12
Zinc	47	47	0.0

Relative percent differences (RPDs) are not calculated when an analyte is nondetected in one field duplicate sample or is detected below the reporting limit in one or both field duplicate samples.

Aerojet Site PGOU
Lead - Data Qualification Summary - SDG S601116

SDG	Sample	Analyte	Flag	A or P	Reason
S601116	All samples	Sb, Ba, K, Mo, Se, V	J detects UJ non-detects	A	Matrix spike recoveries < control limits

Aerojet Site PGOU
Lead - Laboratory Blank Data Qualification Summary - SDG S601116

No Sample Data Qualified in this SDG

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS22-0 (S601116-01) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Aluminum	**14000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 15:39	"	
Arsenic	**7.1**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 14:59	EPA 6020	
Barium	**170**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	
Beryllium	**0.74**	0.20	0.50	"	"	"	"	"	"	
Boron	**9.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.22**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 14:59	EPA 6020	J
Calcium	**2400**	5.0	15	"	"	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	
Chromium	**56**	0.30	1.0	"	"	"	"	01/11/06 15:39	"	
Cobalt	**17**	0.30	1.0	"	"	"	"	"	"	
Copper	**39**	0.20	2.0	"	"	"	"	01/11/06 15:38	"	
Iron	**31000**	3.0	10	"	2	"	"	01/11/06 19:20	"	B-1
Lead	**15**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 14:59	EPA 6020	
Magnesium	**4300**	0.90	10	"	"	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	B-1
Manganese	**790**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.095**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:17	EPA 7471A	
Molybdenum	**0.46**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:39	EPA 6010B	J
Nickel	**32**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2100**	40	50	"	"	"	"	01/11/06 15:37	"	
Selenium	**0.39**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 14:59	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	
Sodium	**47**	15	50	"	"	"	"	01/11/06 15:37	"	J
Thallium	**0.16**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 14:59	EPA 6020	J
Titanium	**630**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:38	EPA 6010B	
Vanadium	**94**	0.30	1.0	"	"	"	"	"	"	

DU Qual

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CJ 1/27/06

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS22-0 (S601116-01) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Zinc	**46**	0.50	10	mg/kg	1	6A10111	01/10/06	01/11/06 14:59	EPA 6020	B-1
C15-SS22D-0 (S601116-02) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Aluminum	**14000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 15:45	"	
Arsenic	**7.2**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:02	EPA 6020	
Barium	**170**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	
Beryllium	**0.70**	0.20	0.50	"	"	"	"	"	"	
Boron	**8.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.18**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:02	EPA 6020	J
Calcium	**2300**	5.0	15	"	"	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	
Chromium	**58**	0.30	1.0	"	"	"	"	01/11/06 15:45	"	
Cobalt	**19**	0.30	1.0	"	"	"	"	"	"	
Copper	**42**	0.20	2.0	"	"	"	"	01/11/06 15:44	"	
Iron	**27000**	3.0	10	"	2	"	"	01/11/06 19:25	"	B-1
Lead	**15**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:02	EPA 6020	
Magnesium	**4500**	0.90	10	"	"	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	B-1
Manganese	**700**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.092**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:19	EPA 7471A	
Molybdenum	**0.40**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:45	EPA 6010B	J
Nickel	**31**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2300**	40	50	"	"	"	"	01/11/06 15:43	"	
Selenium	**0.21**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:02	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	
Sodium	**57**	15	50	"	"	"	"	01/11/06 15:43	"	

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS22D-0 (S601116-02) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Thallium	**0.15**	0.10	0.50	mg/kg	1	6A10111	01/10/06	01/11/06 15:02	EPA 6020	J
Titanium	**690**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:44	EPA 6010B	
Vanadium	**94**	0.30	1.0	"	"	"	"	"	"	
Zinc	**49**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:02	EPA 6020	B-1
C15-SS25-0 (S601116-03) Soil Sampled: 01/05/06 11:05 Received: 01/05/06 16:56										
Aluminum	**15000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	
Antimony	**1.3**	0.80	10	"	"	"	"	01/11/06 15:50	"	J
Arsenic	**6.1**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:06	EPA 6020	
Barium	**200**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	
Beryllium	**0.61**	0.20	0.50	"	"	"	"	"	"	
Boron	**8.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.27**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:06	EPA 6020	J
Calcium	**2200**	5.0	15	"	"	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	
Chromium	**60**	0.30	1.0	"	"	"	"	01/11/06 15:50	"	
Cobalt	**23**	0.30	1.0	"	"	"	"	"	"	
Copper	**46**	0.20	2.0	"	"	"	"	01/11/06 15:49	"	
Iron	**26000**	3.0	10	"	2	"	"	01/11/06 19:30	"	B-1
Lead	**14**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:06	EPA 6020	
Magnesium	**6200**	0.90	10	"	"	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	B-1
Manganese	**920**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.049**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:21	EPA 7471A	
Molybdenum	**0.49**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:50	EPA 6010B	J
Nickel	**36**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2700**	40	50	"	"	"	"	01/11/06 15:48	"	
Selenium	**0.26**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:06	EPA 6020	J

DU Qual

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS25-0 (S601116-03) Soil Sampled: 01/05/06 11:05 Received: 01/05/06 16:56										
Silver	ND	0.40	1.0	mg/kg	1	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	
Sodium	**72**	15	50	"	"	"	"	01/11/06 15:48	"	
Thallium	**0.18**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:06	EPA 6020	J
Titanium	**790**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:49	EPA 6010B	
Vanadium	**85**	0.30	1.0	"	"	"	"	"	"	
Zinc	**120**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:06	EPA 6020	B-1
C15-SS26-0 (S601116-04) Soil Sampled: 01/05/06 11:30 Received: 01/05/06 16:56										
Aluminum	**13000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 15:56	"	
Arsenic	**5.9**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	
Barium	**160**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	
Beryllium	**0.52**	0.20	0.50	"	"	"	"	"	"	
Boron	**7.2**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.18**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	J
Calcium	**2300**	5.0	15	"	"	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	
Chromium	**44**	0.30	1.0	"	"	"	"	01/11/06 15:56	"	
Cobalt	**18**	0.30	1.0	"	"	"	"	"	"	
Copper	**39**	0.20	2.0	"	"	"	"	01/11/06 15:55	"	
Iron	**22000**	1.5	5.0	"	"	"	"	"	"	B-1
Lead	**15**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	
Magnesium	**4600**	0.90	10	"	"	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	B-1
Manganese	**830**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.062**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:23	EPA 7471A	
Molybdenum	**0.47**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:56	EPA 6010B	J
Nickel	**31**	0.20	2.0	"	"	"	"	"	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS26-0 (S601116-04) Soil Sampled: 01/05/06 11:30 Received: 01/05/06 16:56										
Potassium	**2700**	40	50	mg/kg	1	6A10109	01/10/06	01/11/06 15:54	EPA 6010B	
Selenium	**0.25**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	
Sodium	**58**	15	50	"	"	"	"	01/11/06 15:54	"	
Thallium	**0.14**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	J
Titanium	**650**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:55	EPA 6010B	
Vanadium	**69**	0.30	1.0	"	"	"	"	"	"	
Zinc	**52**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:10	EPA 6020	B-1
C15-SS24-0 (S601116-05) Soil Sampled: 01/05/06 11:32 Received: 01/05/06 16:56										
Aluminum	**14000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 16:01	"	
Arsenic	**6.4**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	
Barium	**190**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	
Beryllium	**0.64**	0.20	0.50	"	"	"	"	"	"	
Boron	**7.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.18**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	J
Calcium	**2500**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	
Chromium	**52**	0.30	1.0	"	"	"	"	01/11/06 16:01	"	
Cobalt	**21**	0.30	1.0	"	"	"	"	"	"	
Copper	**40**	0.20	2.0	"	"	"	"	01/11/06 16:00	"	
Iron	**24000**	1.5	5.0	"	"	"	"	"	"	B-1
Lead	**13**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	
Magnesium	**5600**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	B-1
Manganese	**890**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.048**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:25	EPA 7471A	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number: -	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS24-0 (S601116-05) Soil Sampled: 01/05/06 11:32 Received: 01/05/06 16:56										
Molybdenum	**0.30**	0.20	2.0	mg/kg	1	6A10109	01/10/06	01/11/06 16:01	EPA 6010B	J
Nickel	**40**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2500**	40	50	"	"	"	"	01/11/06 15:59	"	
Selenium	**0.34**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	
Sodium	**60**	15	50	"	"	"	"	01/11/06 15:59	"	
Thallium	**0.16**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	J
Titanium	**690**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:00	EPA 6010B	
Vanadium	**80**	0.30	1.0	"	"	"	"	"	"	
Zinc	**61**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:14	EPA 6020	B-1
C15-SS21-0 (S601116-06) Soil Sampled: 01/05/06 11:55 Received: 01/05/06 16:56										
Aluminum	**15000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	"	"	
Arsenic	**6.1**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:17	EPA 6020	
Barium	**170**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	
Beryllium	**0.69**	0.20	0.50	"	"	"	"	"	"	
Boron	**6.7**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.15**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:17	EPA 6020	J
Calcium	**2600**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	
Chromium	**53**	0.30	1.0	"	"	"	"	"	"	
Cobalt	**20**	0.30	1.0	"	"	"	"	"	"	
Copper	**41**	0.20	2.0	"	"	"	"	"	"	
Iron	**27000**	3.0	10	"	2	"	"	01/11/06 19:36	"	B-1
Lead	**12**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:17	EPA 6020	
Magnesium	**5500**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	B-1
Manganese	**770**	0.80	1.0	"	"	"	"	"	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS21-0 (S601116-06) Soil Sampled: 01/05/06 11:55 Received: 01/05/06 16:56										
Mercury	**0.058**	0.0030	0.020	mg/kg	1	6A16067	01/16/06	01/16/06 15:27	EPA 7471A	
Molybdenum	**0.36**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	J
Nickel	**33**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2300**	40	50	"	"	"	"	01/11/06 16:04	"	
Selenium	**0.20**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:17	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	
Sodium	**65**	15	50	"	"	"	"	01/11/06 16:04	"	
Thallium	**0.15**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:17	EPA 6020	J
Titanium	**630**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:06	EPA 6010B	
Vanadium	**86**	0.30	1.0	"	"	"	"	"	"	
Zinc	**50**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:17	EPA 6020	B-1
C15-SS18-0 (S601116-07) Soil Sampled: 01/05/06 11:57 Received: 01/05/06 16:56										
Aluminum	**16000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	
Antimony	**0.87**	0.80	10	"	"	"	"	01/11/06 16:12	"	J
Arsenic	**6.7**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:21	EPA 6020	
Barium	**140**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	
Beryllium	**0.73**	0.20	0.50	"	"	"	"	"	"	
Boron	**7.8**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.36**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:21	EPA 6020	J
Calcium	**2200**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	
Chromium	**55**	0.30	1.0	"	"	"	"	01/11/06 16:12	"	
Cobalt	**20**	0.30	1.0	"	"	"	"	"	"	
Copper	**41**	0.20	2.0	"	"	"	"	01/11/06 16:11	"	
Iron	**29000**	3.0	10	"	2	"	"	01/11/06 19:41	"	B-1

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS18-0 (S601116-07) Soil Sampled: 01/05/06 11:57 Received: 01/05/06 16:56										
Lead	**14**	0.020	0.50	mg/kg	1	6A10111	01/10/06	01/11/06 15:21	EPA 6020	
Magnesium	**4400**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	B-1
Manganese	**790**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.14**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:29	EPA 7471A	
Molybdenum	**0.36**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:12	EPA 6010B	J
Nickel	**32**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2800**	40	50	"	"	"	"	01/11/06 16:10	"	
Selenium	**0.41**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:21	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	
Sodium	**52**	15	50	"	"	"	"	01/11/06 16:10	"	
Thallium	**0.15**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:21	EPA 6020	J
Titanium	**660**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:11	EPA 6010B	
Vanadium	**99**	0.30	1.0	"	"	"	"	"	"	
Zinc	**50**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:21	EPA 6020	B-1
C15-SS13-0 (S601116-08) Soil Sampled: 01/05/06 12:20 Received: 01/05/06 16:56										
Aluminum	**12000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:16	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 16:17	"	
Arsenic	**6.9**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:25	EPA 6020	
Barium	**150**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:17	EPA 6010B	
Beryllium	**0.74**	0.20	0.50	"	"	"	"	"	"	
Boron	**8.3**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.24**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:25	EPA 6020	J
Calcium	**2400**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:16	EPA 6010B	
Chromium	**50**	0.30	1.0	"	"	"	"	01/11/06 16:17	"	
Cobalt	**14**	0.30	1.0	"	"	"	"	"	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number: -	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS13-0 (S601116-08) Soil Sampled: 01/05/06 12:20 Received: 01/05/06 16:56										
Copper	**37**	0.20	2.0	mg/kg	1	6A10109	01/10/06	01/11/06 16:17	EPA 6010B	
Iron	**28000**	3.0	10	"	2	"	"	01/11/06 19:47	"	B-1
Lead	**21**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:25	EPA 6020	
Magnesium	**3900**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:17	EPA 6010B	B-1
Manganese	**570**	0.80	1.0	"	"	"	"	01/11/06 16:16	"	
Mercury	**0.14**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:32	EPA 7471A	
Molybdenum	**0.41**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:17	EPA 6010B	J
Nickel	**21**	0.20	2.0	"	"	"	"	"	"	
Potassium	**1900**	40	50	"	"	"	"	01/11/06 16:15	"	
Selenium	**0.29**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:25	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:17	EPA 6010B	
Sodium	**39**	15	50	"	"	"	"	01/11/06 16:15	"	J
Thallium	**0.14**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:25	EPA 6020	J
Titanium	**650**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:16	EPA 6010B	
Vanadium	**98**	0.30	1.0	"	"	"	"	01/11/06 16:17	"	
Zinc	**54**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:25	EPA 6020	B-1
C15-SS14-0 (S601116-09) Soil Sampled: 01/05/06 12:22 Received: 01/05/06 16:56										
Aluminum	**13000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	M-HA
Antimony	**0.88**	0.80	10	"	"	"	"	"	"	M2, J
Arsenic	**7.4**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 14:27	EPA 6020	
Barium	**150**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	M2
Beryllium	**0.77**	0.20	0.50	"	"	"	"	"	"	
Boron	**9.8**	1.0	5.0	"	"	"	"	"	"	M2
Cadmium	**0.17**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 14:27	EPA 6020	J

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS14-0 (S601116-09) Soil Sampled: 01/05/06 12:22 Received: 01/05/06 16:56										
Calcium	**2100**	5.0	15	mg/kg	1	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	
Chromium	**54**	0.30	1.0	"	"	"	"	"	"	
Cobalt	**15**	0.30	1.0	"	"	"	"	"	"	
Copper	**40**	0.20	2.0	"	"	"	"	"	"	
Iron	**30000**	3.0	10	"	2	"	"	01/11/06 19:04	"	B-1, M-HA
Lead	**13**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 14:27	EPA 6020	
Magnesium	**4000**	0.90	10	"	"	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	B-1, M-HA
Manganese	**580**	0.80	1.0	"	"	"	"	"	"	M-HA
Mercury	**0.090**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:06	EPA 7471A	
Molybdenum	**0.47**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	M2, J
Nickel	**26**	0.20	2.0	"	"	"	"	"	"	
Potassium	**1800**	40	50	"	"	"	"	01/11/06 15:10	"	M2
Selenium	**0.30**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 14:27	EPA 6020	M2, J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	
Sodium	**50**	15	50	"	"	"	"	01/11/06 15:10	"	
Thallium	**0.21**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 14:27	EPA 6020	J
Titanium	**650**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 15:12	EPA 6010B	M-HA
Vanadium	**110**	0.30	1.0	"	"	"	"	"	"	M2
Zinc	**43**	0.50	10	"	"	6A10111	01/10/06	01/11/06 14:27	EPA 6020	B-1
C15-SS15-0 (S601116-10) Soil Sampled: 01/05/06 13:55 Received: 01/05/06 16:56										
Aluminum	**16000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Antimony	**0.97**	0.80	10	"	"	"	"	01/11/06 16:23	"	J
Arsenic	**7.7**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:48	EPA 6020	
Barium	**160**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Beryllium	**0.79**	0.20	0.50	"	"	"	"	"	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS15-0 (S601116-10) Soil Sampled: 01/05/06 13:55 Received: 01/05/06 16:56										
Boron	**8.7**	1.0	5.0	mg/kg	1	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Cadmium	**0.61**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:48	EPA 6020	
Calcium	**2500**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Chromium	**58**	0.30	1.0	"	"	"	"	01/11/06 16:23	"	
Cobalt	**20**	0.30	1.0	"	"	"	"	"	"	
Copper	**44**	0.20	2.0	"	"	"	"	01/11/06 16:22	"	
Iron	**31000**	3.0	10	"	2	"	"	01/11/06 19:52	"	B-1
Lead	**35**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:48	EPA 6020	
Magnesium	**4000**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	B-1
Manganese	**740**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.15**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:34	EPA 7471A	
Molybdenum	**0.52**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:23	EPA 6010B	J
Nickel	**33**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2400**	40	50	"	"	"	"	01/11/06 16:21	"	
Selenium	**0.53**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:48	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Sodium	**59**	15	50	"	"	"	"	01/11/06 16:21	"	
Thallium	**0.15**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:48	EPA 6020	J
Titanium	**660**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:22	EPA 6010B	
Vanadium	**100**	0.30	1.0	"	"	"	"	"	"	
Zinc	**93**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:48	EPA 6020	B-1
C15-SS12-0 (S601116-11) Soil Sampled: 01/05/06 14:00 Received: 01/05/06 16:56										
Aluminum	**15000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 16:39	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS12-0 (S601116-11) Soil Sampled: 01/05/06 14:00 Received: 01/05/06 16:56										
Arsenic	**6.2**	0.25	0.50	mg/kg	1	6A10111	01/10/06	01/11/06 15:52	EPA 6020	
Barium	**150**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	
Beryllium	**0.72**	0.20	0.50	"	"	"	"	"	"	
Boron	**6.9**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.19**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:52	EPA 6020	J
Calcium	**2400**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	
Chromium	**54**	0.30	1.0	"	"	"	"	01/11/06 16:39	"	
Cobalt	**17**	0.30	1.0	"	"	"	"	"	"	
Copper	**41**	0.20	2.0	"	"	"	"	01/11/06 16:38	"	
Iron	**29000**	3.0	10	"	2	"	"	01/11/06 20:08	"	B-1
Lead	**13**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 15:52	EPA 6020	
Magnesium	**4100**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	B-1
Manganese	**630**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.12**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:36	EPA 7471A	
Molybdenum	**0.41**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:39	EPA 6010B	J
Nickel	**31**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2800**	40	50	"	"	"	"	01/11/06 16:37	"	
Selenium	**0.36**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:52	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	
Sodium	**45**	15	50	"	"	"	"	01/11/06 16:37	"	J
Thallium	**0.13**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:52	EPA 6020	J
Titanium	**560**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:38	EPA 6010B	
Vanadium	**95**	0.30	1.0	"	"	"	"	"	"	
Zinc	**44**	0.50	10	"	"	6A10111	01/10/06	01/11/06 15:52	EPA 6020	B-1

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS20-0 (S601116-12) Soil Sampled: 01/05/06 14:28 Received: 01/05/06 16:56										
Aluminum	**12000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 16:44	"	
Arsenic	**6.4**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 15:55	EPA 6020	
Barium	**140**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	
Beryllium	**0.61**	0.20	0.50	"	"	"	"	"	"	
Boron	**5.9**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.30**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:55	EPA 6020	J
Calcium	**2400**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	
Chromium	**46**	0.30	1.0	"	"	"	"	01/11/06 16:44	"	
Cobalt	**16**	0.30	1.0	"	"	"	"	"	"	
Copper	**41**	0.20	2.0	"	"	"	"	01/11/06 16:43	"	
Iron	**24000**	1.5	5.0	"	"	"	"	"	"	B-1
Lead	**23**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 15:55	EPA 6020	
Magnesium	**4100**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	B-1
Manganese	**610**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.079**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:42	EPA 7471A	
Molybdenum	**0.37**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:44	EPA 6010B	J
Nickel	**25**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2000**	40	50	"	"	"	"	01/11/06 16:42	"	
Selenium	**0.44**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 15:55	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	
Sodium	**50**	15	50	"	"	"	"	01/11/06 16:42	"	
Thallium	**0.13**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 15:55	EPA 6020	J
Titanium	**540**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:43	EPA 6010B	
Vanadium	**80**	0.30	1.0	"	"	"	"	"	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number: -	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS20-0 (S601116-12) Soil	**Sampled: 01/05/06 14:28**		**Received: 01/05/06 16:56**							
Zinc	**61**	0.50	10	mg/kg	1	6A10111	01/10/06	01/11/06 15:55	EPA 6020	B-1
C15-SS17-0 (S601116-13) Soil	**Sampled: 01/05/06 14:30**		**Received: 01/05/06 16:56**							
Aluminum	**20000**	10	20	mg/kg	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	
Antimony	**1.6**	1.6	20	"	"	"	"	01/11/06 20:14	"	RL-1, J
Arsenic	**6.7**	0.25	0.50	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	
Barium	**200**	1.6	2.0	"	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	
Beryllium	**0.80**	0.40	1.0	"	"	"	"	"	"	RL-1, J
Boron	**9.0**	2.0	10	"	"	"	"	"	"	RL-1, J
Cadmium	**0.12**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	J
Calcium	**2100**	10	30	"	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	
Chromium	**74**	0.60	2.0	"	"	"	"	01/11/06 20:14	"	
Cobalt	**19**	0.60	2.0	"	"	"	"	"	"	
Copper	**46**	0.40	4.0	"	"	"	"	01/11/06 20:13	"	
Iron	**35000**	3.0	10	"	"	"	"	"	"	B-1
Lead	**11**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	
Magnesium	**6100**	1.8	20	"	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	B-1
Manganese	**570**	1.6	2.0	"	"	"	"	"	"	
Mercury	**0.093**	0.0030	0.020	"	1	6A16067	01/16/06	01/16/06 15:44	EPA 7471A	
Molybdenum	ND	0.40	4.0	"	2	6A10109	01/10/06	01/11/06 20:14	EPA 6010B	RL-1
Nickel	**37**	0.40	4.0	"	"	"	"	"	"	
Potassium	**3400**	80	100	"	"	"	"	01/11/06 20:12	"	
Selenium	**0.32**	0.20	1.0	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	J
Silver	ND	0.80	2.0	"	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	RL-1
Sodium	**46**	30	100	"	"	"	"	01/11/06 20:12	"	RL-1, J
Thallium	**0.20**	0.10	0.50	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	J

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS17-0 (S601116-13) Soil Sampled: 01/05/06 14:30 Received: 01/05/06 16:56										
Titanium	**890**	0.40	4.0	mg/kg	2	6A10109	01/10/06	01/11/06 20:13	EPA 6010B	
Vanadium	**110**	0.60	2.0	"	"	"	"	"	"	
Zinc	**47**	0.50	10	"	1	6A10111	01/10/06	01/11/06 16:00	EPA 6020	B-1
C15-SS17D-0 (S601116-14) Soil Sampled: 01/05/06 14:30 Received: 01/05/06 16:56										
Aluminum	**14000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	
Antimony	**0.90**	0.80	10	"	"	"	"	01/11/06 16:55	"	J
Arsenic	**6.0**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 16:04	EPA 6020	
Barium	**160**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	
Beryllium	**0.70**	0.20	0.50	"	"	"	"	"	"	
Boron	**6.9**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.23**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 16:04	EPA 6020	J
Calcium	**2300**	5.0	15	"	"	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	
Chromium	**55**	0.30	1.0	"	"	"	"	01/11/06 16:55	"	
Cobalt	**18**	0.30	1.0	"	"	"	"	"	"	
Copper	**39**	0.20	2.0	"	"	"	"	01/11/06 16:54	"	
Iron	**27000**	3.0	10	"	2	"	"	01/11/06 20:19	"	B-1
Lead	**13**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 16:04	EPA 6020	
Magnesium	**4900**	0.90	10	"	"	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	B-1
Manganese	**700**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.093**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:46	EPA 7471A	
Molybdenum	**0.34**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:55	EPA 6010B	J
Nickel	**29**	0.20	2.0	"	"	"	"	"	"	
Potassium	**3100**	40	50	"	"	"	"	01/11/06 16:53	"	
Selenium	**0.26**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 16:04	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS17D-0 (S601116-14) Soil Sampled: 01/05/06 14:30 Received: 01/05/06 16:56										
Sodium	**45**	15	50	mg/kg	1	6A10109	01/10/06	01/11/06 16:53	EPA 6010B	J
Thallium	**0.16**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 16:04	EPA 6020	J
Titanium	**680**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 16:54	EPA 6010B	
Vanadium	**98**	0.30	1.0	"	"	"	"	"	"	
Zinc	**47**	0.50	10	"	"	6A10111	01/10/06	01/11/06 16:04	EPA 6020	B-1
C15-SS23-0 (S601116-15) Soil Sampled: 01/05/06 14:40 Received: 01/05/06 16:56										
Aluminum	**15000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	
Antimony	**1.1**	0.80	10	"	"	"	"	01/11/06 17:01	"	J
Arsenic	**7.9**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 16:07	EPA 6020	
Barium	**170**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	
Beryllium	**0.79**	0.20	0.50	"	"	"	"	"	"	
Boron	**7.5**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.19**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 16:07	EPA 6020	J
Calcium	**2200**	5.0	15	"	"	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	
Chromium	**56**	0.30	1.0	"	"	"	"	01/11/06 17:01	"	
Cobalt	**20**	0.30	1.0	"	"	"	"	"	"	
Copper	**39**	0.20	2.0	"	"	"	"	01/11/06 17:00	"	
Iron	**29000**	3.0	10	"	2	"	"	01/11/06 20:24	"	B-1
Lead	**14**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 16:07	EPA 6020	
Magnesium	**4300**	0.90	10	"	"	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	B-1
Manganese	**960**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.078**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:48	EPA 7471A	
Molybdenum	**0.38**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 17:01	EPA 6010B	J
Nickel	**36**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2300**	40	50	"	"	"	"	01/11/06 16:59	"	

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ERM-West - Sacramento	Project: Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager: Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS23-0 (S601116-15) Soil Sampled: 01/05/06 14:40 Received: 01/05/06 16:56										
Selenium	**0.34**	0.20	1.0	mg/kg	1	6A10111	01/10/06	01/11/06 16:07	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	
Sodium	**46**	15	50	"	"	"	"	01/11/06 16:59	"	J
Thallium	**0.14**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 16:07	EPA 6020	J
Titanium	**630**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 17:00	EPA 6010B	
Vanadium	**99**	0.30	1.0	"	"	"	"	"	"	
Zinc	**44**	0.50	10	"	"	6A10111	01/10/06	01/11/06 16:07	EPA 6020	B-1
C15-SS16-0 (S601116-16) Soil Sampled: 01/05/06 15:10 Received: 01/05/06 16:56										
Aluminum	**14000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	
Antimony	**0.87**	0.80	10	"	"	"	"	01/11/06 17:06	"	J
Arsenic	**7.0**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 16:11	EPA 6020	
Barium	**160**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	
Beryllium	**0.79**	0.20	0.50	"	"	"	"	"	"	
Boron	**8.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.31**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 16:11	EPA 6020	J
Calcium	**2800**	5.0	15	"	"	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	
Chromium	**52**	0.30	1.0	"	"	"	"	01/11/06 17:06	"	
Cobalt	**18**	0.30	1.0	"	"	"	"	"	"	
Copper	**52**	0.20	2.0	"	"	"	"	01/11/06 17:05	"	
Iron	**33000**	3.0	10	"	2	"	"	01/11/06 20:29	"	B-1
Lead	**18**	0.020	0.50	"	1	6A10111	01/10/06	01/11/06 16:11	EPA 6020	
Magnesium	**4300**	0.90	10	"	"	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	B-1
Manganese	**710**	0.80	1.0	"	"	"	"	"	"	
Mercury	**0.11**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:50	EPA 7471A	

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.

Sequoia Analytical

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS16-0 (S601116-16) Soil Sampled: 01/05/06 15:10 Received: 01/05/06 16:56										
Molybdenum	**0.37**	0.20	2.0	mg/kg	1	6A10109	01/10/06	01/11/06 17:06	EPA 6010B	J
Nickel	**31**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2900**	40	50	"	"	"	"	01/11/06 17:04	"	
Selenium	**0.37**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 16:11	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	
Sodium	**48**	15	50	"	"	"	"	01/11/06 17:04	"	J
Thallium	**0.14**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 16:11	EPA 6020	J
Titanium	**590**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 17:05	EPA 6010B	
Vanadium	**98**	0.30	1.0	"	"	"	"	"	"	
Zinc	**68**	0.50	10	"	"	6A10111	01/10/06	01/11/06 16:11	EPA 6020	B-1
C15-SS19-0 (S601116-17) Soil Sampled: 01/05/06 15:15 Received: 01/05/06 16:56										
Aluminum	**12000**	5.0	10	mg/kg	1	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Antimony	ND	0.80	10	"	"	"	"	01/11/06 17:12	"	
Arsenic	**6.4**	0.25	0.50	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	
Barium	**180**	0.80	1.0	"	"	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Beryllium	**0.63**	0.20	0.50	"	"	"	"	"	"	
Boron	**6.0**	1.0	5.0	"	"	"	"	"	"	
Cadmium	**0.22**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	J
Calcium	**2600**	5.0	15	"	"	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Chromium	**48**	0.30	1.0	"	"	"	"	01/11/06 17:12	"	
Cobalt	**19**	0.30	1.0	"	"	"	"	"	"	
Copper	**36**	0.20	2.0	"	"	"	"	01/11/06 17:11	"	
Iron	**23000**	1.5	5.0	"	"	"	"	"	"	B-1
Lead	**15**	0.020	0.50	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	
Magnesium	**4100**	0.90	10	"	"	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	B-1

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.

CJ 4/27/06

Sequoia Analytical

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

METALS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS19-0 (S601116-17) Soil Sampled: 01/05/06 15:15 Received: 01/05/06 16:56										
Manganese	**800**	0.80	1.0	mg/kg	1	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Mercury	**0.081**	0.0030	0.020	"	"	6A16067	01/16/06	01/16/06 15:52	EPA 7471A	
Molybdenum	**0.30**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 17:12	EPA 6010B	J
Nickel	**33**	0.20	2.0	"	"	"	"	"	"	
Potassium	**2400**	40	50	"	"	"	"	01/11/06 17:10	"	
Selenium	**0.29**	0.20	1.0	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	J
Silver	ND	0.40	1.0	"	"	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Sodium	**45**	15	50	"	"	"	"	01/11/06 17:10	"	J
Thallium	**0.13**	0.10	0.50	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	J
Titanium	**550**	0.20	2.0	"	"	6A10109	01/10/06	01/11/06 17:11	EPA 6010B	
Vanadium	**82**	0.30	1.0	"	"	"	"	"	"	
Zinc	**47**	0.50	10	"	"	6A10111	01/10/06	01/11/06 16:22	EPA 6020	B-1

DU qual

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.

C) 1/27/06

LDC #: 0604-02A4
SDG #: 601116
Laboratory: Sequoia/Del Mar

VALIDATION COMPLETENESS WORKSHEET

✓ EPA Level III/IV

Date: 4/24/06
Page: 1 of 1
Reviewer: CT
2nd Reviewer: KE

METHOD: Metals (EPA SW 846 Method 6010/6020/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/5/2006
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike/Matrix Spike Duplicates	SW	
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	
VIII.	Internal Standard (ICP-MS)	A	
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	C15-SS22-0	11	C15-SS12-0	21		31	
2	C15-SS22D-0	12	C15-SS20-0	22		32	
3	C15-SS25-0 **	13	C15-SS17-0	23		33	
4	C15-SS26-0	14	C15-SS17D-0	24		34	
5	C15-SS24-0	15	C15-SS23-0	25		35	
6	C15-SS21-0	16	C15-SS16-0	26		36	
7	C15-SS18-0	17	C15-SS19-0	27		37	
8	C15-SS13-0	18		28		38	
9	C15-SS14-0	19		29		39	
10	C15-SS15-0 **	20		30		40	

Notes:

LDC #: 06604-02A1
SDG #: 960111G

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: CJ
2nd Reviewer: ME

Method: Metals (EPA SW 826 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995? (Level IV only)	✓			
Was a midrange cyanide standard distilled? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?				
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.		✓		
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?		✓ CJ	✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 06604-02A4
SDG #: S601116

VALIDATION FINDINGS CHECKLIST

Reviewer: CJ
2nd Reviewer: RB

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 0604-02A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: CT
2nd reviewer: NE

Were samples preserved? Y N N/A
All circled dates have exceeded the technical holding time.
Y N N/A Were all cooler temperatures within validation criteria? 15°C/7°C

METHOD: EPA SW 846 Method 6010/6020/7000		(CVAA) Hg	(ICP) Al, Sb, Ba, Be, B, Ca, Cr, Co, Cu, Fe, Mg, Mn, Mo, Ni, K, Ag, Na, Ti, V	(ICPMS) As, Cd, Pb, Se, Tl, Zn	(GFAA) —	(GFAA) —	(GFAA) —	
Sample ID:	Sampling Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Qualifier
C15-SS22-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS22D-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS25-0 **	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS26-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS24-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS21-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS18-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS13-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS14-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS15-0 **	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS12-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS20-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS17-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS17D-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS23-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS16-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None
C15-SS19-0	1/5/2006	1/16/2006	1/11/2006	1/11/2006				None

Technical Holding Time Criteria

Mercury: 28 days preserved pH <2
All other metals 6 months preserved pH <2

LDC #: 06604-01A4
SDG #: S600116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %R	Difference	Acceptable (Y/N)
ICV	1/11/2006	1	Al	2.0	1.931	96.6	-3.6	Y
	(9:29)	1	Sb	2.0	2.069	103.5	3.3	Y
		1	As	2.0	2.034	101.7	1.7	Y
		1	Ba	2.0	1.916	95.8	-4.4	Y
		1	Be	2.0	2.011	100.6	0.5	Y
		1	B	2.0	1.969	98.5	-1.6	Y
		1	Cd	2.0	1.964	98.2	-1.8	Y
		1	Ca	2.0	2.052	102.6	2.5	Y
		1	Cr	2.0	2.016	100.8	0.8	Y
		1	Co	2.0	2.009	100.5	0.4	Y
		1	Cu	2.0	1.995	99.8	-0.3	Y
		1	Fe	2.0	2.027	101.4	1.3	Y
		1	Pb	2.0	2.012	100.6	0.6	Y
		1	Mg	2.0	2.04	102.0	2.0	Y
		1	Mn	2.0	2.032	101.6	1.6	Y
		1	Mo	2.0	1.999	100.0	-0.1	Y
		1	Ni	2.0	2.034	101.7	1.7	Y
		1	K	5.0	4.92	98.4	-1.6	Y
		1	Se	2.0	2.007	100.4	0.3	Y
		1	Ag	1.0	1.035	103.5	3.4	Y
		1	Na	5.0	4.887	97.7	-2.3	Y
		1	Tl	2.0	2.082	104.1	3.9	Y
		1	Ti	2.0	2.068	103.4	3.3	Y
		1	Sn	2.0	1.976	98.8	-1.2	Y
		1	V	2.0	1.99	99.5	-0.5	Y
		1	Zn	2.0	1.931	96.6	-3.6	Y

LDC #: 0604-01A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CT
2nd Reviewer: [illegible]

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %D/RPD	Reported %D/RPD	Difference	Acceptable (Y/N)
CCV	1/11/2006	1	Al	1.0	0.9742	97.42	99.82	-2.46	Y
	(4:25)	1	Sb	1.0	1.041	104.10	100.98	3.00	Y
		1	As	1.0	1.017	101.70	101.04	0.65	Y
		1	Ba	1.0	0.9822	98.22	97.34	0.90	Y
		1	Be	1.0	0.9994	99.94	94.99	4.95	Y
		1	B	1.0	1.027	102.70	102.10	0.58	Y
		1	Cd	1.0	1.007	100.70	101.20	-0.50	Y
		1	Ca	10.0	9.811	98.11	101.75	-3.71	Y
		1	Cr	1.0	1.015	101.50	97.70	3.74	Y
		1	Co	1.0	1.016	101.60	97.94	3.60	Y
		1	Cu	1.0	0.987	98.70	97.70	1.01	Y
		1	Fe	1.0	1.035	103.50	103.30	0.19	Y
		1	Pb	1.0	1.001	100.10	100.56	-0.46	Y
		1	Mg	1.0	1.019	101.90	100.70	1.18	Y
		1	Mn	1.0	1.008	100.80	96.57	4.20	Y
		1	Mo	1.0	1.017	101.70	100.00	1.67	Y
		1	Ni	1.0	1.013	101.30	97.24	4.01	Y
		1	K	10.0	10.3	103.00	100.98	1.96	Y
		1	Se	1.0	0.9887	98.87	101.24	-2.40	Y
		1	Ag	0.5	0.4927	98.54	96.54	2.03	Y
		1	Na	10.0	9.651	96.51	100.45	-4.08	Y
		1	Tl	1.0	1.001	100.10	98.68	1.42	Y
		1	Ti	1.0	1.011	101.10	101.10	0.00	Y
		1	Sn	1.0	1.001	100.10	101.10	-1.00	Y
		1	V	1.0	1.001	100.10	98.60	1.50	Y
		1	Zn	1.0	1.002	100.20	101.00	-0.80	Y

LDC #: 8604-01A4
SDG #: 3601116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CJ
2nd Reviewer: KE

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %D/RPD	Reported %D/RPD	Difference	Acceptable (Y/N)
CCV	1/11/2006	1	Al	1.0	0.9274	92.74	99.82	-7.63	Y
	(6:46)	1	Sb	1.0	1.026	102.60	100.98	1.58	Y
		1	As	1.0	0.9953	99.53	101.04	-1.52	Y
		1	Ba	1.0	0.9659	96.59	97.34	-0.78	Y
		1	Be	1.0	0.9929	99.29	94.99	4.33	Y
		1	B	1.0	1.029	102.90	102.10	0.78	Y
		1	Cd	1.0	1.011	101.10	101.20	-0.10	Y
		1	Ca	10.0	9.738	97.38	101.75	-4.49	Y
		1	Cr	1.0	0.9951	99.51	97.70	1.82	Y
		1	Co	1.0	1.012	101.20	97.94	3.22	Y
		1	Cu	1.0	0.9685	96.85	97.70	-0.88	Y
		1	Fe	1.0	1.003	100.30	103.30	-2.99	Y
		1	Pb	1.0	0.9855	98.55	100.56	-2.04	Y
		1	Mg	1.0	1.003	100.30	100.70	-0.40	Y
		1	Mn	1.0	1.000	100.00	96.57	3.43	Y
		1	Mo	1.0	0.9962	99.62	100.00	-0.38	Y
		1	Ni	1.0	0.9966	99.66	97.24	2.43	Y
		1	K	10.0	10.38	103.80	100.98	2.72	Y
		1	Se	1.0	0.971	97.10	101.24	-4.26	Y
		1	Ag	0.5	0.4865	97.30	96.54	0.78	Y
		1	Na	10.0	9.627	96.27	100.45	-4.34	Y
		1	Tl	1.0	0.9839	98.39	98.68	-0.29	Y
		1	Ti	1.0	1.003	100.30	101.10	-0.80	Y
		1	Sn	1.0	0.9839	98.39	101.10	-2.75	Y
		1	V	1.0	0.9906	99.06	98.60	0.46	Y
		1	Zn	1.0	1.000	100.00	101.00	-1.00	Y

LDC #: 06604-VA4
SDG #: S600116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %D/RPD	Reported %D/RPD	Difference	Acceptable (Y/N)
CCV	1/11/2006	1	Al	1.0	0.9293	92.93	99.82	-7.41	Y
	(7:55)	1	Sb	1.0	1.039	103.90	100.98	2.81	Y
		1	As	1.0	1.016	101.60	101.04	0.55	Y
		1	Ba	1.0	0.9682	96.82	97.34	-0.54	Y
		1	Be	1.0	0.9828	98.28	94.99	3.35	Y
		1	B	1.0	0.9898	98.98	102.10	-3.15	Y
		1	Cd	1.0	1.012	101.20	101.20	0.00	Y
		1	Ca	10.0	9.768	97.68	101.75	-4.17	Y
		1	Cr	1.0	1.011	101.10	97.70	3.36	Y
		1	Co	1.0	1.014	101.40	97.94	3.41	Y
		1	Cu	1.0	0.9687	96.87	97.70	-0.86	Y
		1	Fe	1.0	1.019	101.90	103.30	-1.37	Y
		1	Pb	1.0	0.9984	99.84	100.56	-0.72	Y
		1	Mg	1.0	1.015	101.50	100.70	0.79	Y
		1	Mn	1.0	0.9897	98.97	96.57	2.42	Y
		1	Mo	1.0	1.012	101.20	100.00	1.19	Y
		1	Ni	1.0	1.01	101.00	97.24	3.72	Y
		1	K	10.0	10.31	103.10	100.98	2.06	Y
		1	Se	1.0	0.9861	98.61	101.24	-2.67	Y
		1	Ag	0.5	0.4863	97.26	96.54	0.74	Y
		1	Na	10.0	9.59	95.90	100.45	-4.74	Y
		1	Tl	1.0	0.9955	99.55	98.68	0.87	Y
		1	Ti	1.0	0.9981	99.81	101.10	-1.29	Y
		1	Sn	1.0	0.9977	99.77	101.10	-1.33	Y
		1	V	1.0	0.9944	99.44	98.60	0.84	Y
		1	Zn	1.0	0.9994	99.94	101.00	-1.06	Y

LDC #: 0604-01A4
SDG #: S600116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CJ
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %R	Difference	Acceptable (Y/N)
ICV	1/11/2006	1	As	25.0	25.1588	100.6	0.6	Y
	(11:53)	1	Cd	25.0	24.4438	97.8	-2.3	Y
		1	Pb	25.0	24.8037	99.2	-0.8	Y
		1	Se	25.0	23.82458	95.3	-4.9	Y
		1	Tl	25.0	25.43895	101.8	1.7	Y
		1	Zn	25.0	26.9251	107.7	7.1	Y
CCV	1/11/2006	1	As	50.0	51.64954	103.3	3.2	Y
	(14:39)	1	Cd	50.0	51.23678	102.5	2.4	Y
		1	Pb	50.0	52.19873	104.4	4.2	Y
		1	Se	50.0	50.28767	100.6	0.6	Y
		1	Tl	50.0	53.29536	106.6	6.2	Y
		1	Zn	50.0	50.66417	101.3	1.3	Y
CCV	1/11/2006	1	As	50.0	52.80021	105.6	5.3	Y
	(15:29)	1	Cd	50.0	52.3616	104.7	4.5	Y
		1	Pb	50.0	53.16735	106.3	6.0	Y
		1	Se	50.0	50.87675	101.8	1.7	Y
		1	Tl	50.0	54.11677	108.2	7.6	Y
		1	Zn	50.0	50.48102	101.0	1.0	Y

LDC #: 0604-QA4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	Recalculated %R	Difference	Acceptable (Y/N)
CCV	1/11/2006	1	As	50.0	51.92126	103.8	3.7	Y
	(16:15)	1	Cd	50.0	53.35796	106.7	6.3	Y
		1	Pb	50.0	54.09373	108.2	7.6	Y
		1	Se	50.0	50.11055	100.2	0.2	Y
		1	Tl	50.0	54.56842	109.1	8.4	Y
		1	Zn	50.0	51.49355	103.0	2.9	Y

LDC#: 0604-01AU
SDG#: 560116

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: CI
2nd Reviewer: KB

Method: Mercury (EPA SW 846 Method 7471)

Calibration Date	Detector	Compound	Standard	(Y) Response	(X) Concentration
1/16/2006		Hg	Point 1	0	0
			Point 2	0.0019	0.2
			Point 3	0.0092	1.0
			Point 4	0.0441	5.0
			Point 5	0.0875	10
			Point 6	0.1301	15

Regression Output

Constant	b	*3.517E-04*
Std Err of Y Est		
R Squared		*0.99996*
Degrees of Freedom		
X Coefficient(s)	m	*8.676E-03*
Std Err of Coef.		
Correlation Coefficient		*0.99998*
Coefficient of Determination (r^2)		*0.99996*

LDC #: 0604-QA4
SDG #: 5601116

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Results Verification

Reviewer: CT
2nd Reviewer: KE

METHOD: Mercury by CVAA (EPA SW 846 Method 7471A)

The percent recoveries (%R) were calculated for ICP Metals using the following calculation:

Percent recovery (%R) = 100 * C/N

Where:
True = Concentration in the ICV or CCV Source
Found = Concentration measured in the analysis of the ICV or CCV solution

Standard ID	Calibration Date/Time	Signal	Compound	N TRUE (conc.)	C FOUND (conc.)	% Recovery	Difference	Acceptable (Y/N)
ICV	1/16/2006	1	Hg	8.0	8.011	100.1	0.1	Y
	(1:52)							
CCV	1/16/2006	1	Hg	4.0	3.967	99.2	-0.8	Y
	(2:48)							
CCV	1/16/2006	1	Hg	4.0	3.984	99.6	-0.4	Y
	(3:13)							
CCV	1/16/2006	1	Hg	4.0	3.980	99.5	-0.5	Y
	(/3:34)							
CCV	1/16/2006	a	Hg	4.0	3.980	99.5	-0.5	Y
	(4:.3)							

LDC #: 0604-02A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 2
Reviewer: CT
2nd Reviewer: KE

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: _____ Associated Samples: _____

				Sample Identification										
Analyte	**Maximum PB[a] (mg/Kg)**	**Maximum PB[a] (ug/L)**	**Maximum ICB/CCB[a] (ug/L)**	1	2	3	4	5	6	7	8	9	10	11
Al														
Sb														
As														
Ba														
Be														
Cd														
Ca														
Cr														
Co														
Cu														
Fe	4.82			31,000	27,000	26,000	22,000	24,000	27,000	29,000	28,000	30,000	31,000	29,000
Pb														
Mg	1.60			4,300	4,500	6,200	4,600	5,600	5,500	4,400	3,900	4,000	4,000	4,100
Mn														
Hg														
Ni														
K														
Se														
Ag														
Na														
Tl														
V														
Zn	1.40			46	49	120	52	61	50	50	54	43	93	44
B														
Mo														

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 0604-02A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: C7
2nd Reviewer: KE

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: _____ Associated Samples: _____

				Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/l)	Maximum ICB/CCB[a] (ug/l)	12	13	14	15	16	17					
Al														
Sb														
As														
Ba														
Be														
Cd														
Ca														
Cr														
Co														
Cu														
Fe	4.82			24,000	35,000	27,000	29,000	33,000	23,000					
Pb														
Mg	1.60			4,100	6,100	4,900	4,300	4,300	4,100					
Mn														
Hg														
Ni														
K														
Se														
Ag														
Na														
Tl														
V														
Zn	1.40			61	47	47	44	68	47					
B														
Mo														

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 0604-02A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: CT
2nd Reviewer: KC

METHOD: Trace metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for soil samples?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1		C15-SS14-0	Soil	Al	3800 (75 - 125)	11000 (75 - 125)	22 (20)	All samples	None (sample conc >4x spike)
				Fe	1000 (75 - 125)	3400 (75 - 125)	4 (20)		None (sample conc >4x spike)
				Mg	44 (75 - 125)	104 (75 - 125)	4 (20)		None (sample conc >4x spike)
				Mn	184 (75 - 125)	120 (75 - 125)	5 (20)		None (sample conc >4x spike)
				Ti	236 (75 - 125)	218 (75 - 125)	1 (20)		None (sample conc >4x spike)
				Sb	50 (75 - 125)	43 (75 - 125)	15 (20)		J/UJ
				Ba	74 (75 - 125)	78 (75 - 125)	1 (20)		J/UJ
				K	72 (75 - 125)	78 (75 - 125)	1 (20)		J/UJ
				Mo	75 (75 - 125)	72 (75 - 125)	4 (20)		J/UJ
				Se	63 (75 - 125)	67 (75 - 125)	6 (20)		J/UJ
				V	78 (75 - 125)	70 (75 - 125)	3 (20)		J/UJ

Comments:

LDC #: 0604-01A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Result Verification

Page: 1 of 2
Reviewer: CJ
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B)

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike recovery MSD = Matrix spike duplicate recovery

MS/MSD samples: C15-SS14-0MS/C15-SS14-0MSD

Compound	Spike Added (mg/Kg)		Sample Concentration (mg/Kg)	Spiked Sample Concentration (mg/Kg)		MS Percent Recovery		MSD Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Aluminum	50	50	13000	14900	18500	3800	3800	11000	11000	22	97.3
Antimony	50	50	0.88	26.1	22.4	50	50	43	43	15	15.8
Barium	50	50	150	187	189	74	74	78	78	1	5.3
Beryllium	50	50	0.77	46.7	45.6	92	92	90	90	2	2.4
Boron	50	50	9.8	39.1	40.1	59	59	61	61	3	3.4
Calcium	250	250	2100	2350	2320	100	100	88	88	1	12.8
Chromium	50	50	54	99.1	102	90	90	96	96	3	6.2
Cobalt	50	50	15	60.8	59.7	92	92	89	89	2	2.4
Copper	50	50	40	82.5	82.7	85	85	85	85	0.2	0.5
Iron	50	50	30000	30500	31700	1000	1000	3400	3400	4	109.1
Magnesium	250	250	4000	4110	4260	44	44	104	104	4	81.1
Manganese	50	50	580	672	640	184	184	120	120	5	42.1
Molybdenum	50	50	0.47	38.1	36.7	75	75	72	72	4	3.8
Nickel	50	50	26	72.0	75.1	92	92	98	98	4	6.5
Potassium	500	500	1800	2160	2190	72	72	78	78	1	8.0
Silver	25	25	0	21.2	20.3	85	85	81	81	4	4.3
Sodium	500	500	50	505	484	91	91	87	87	4	4.7
Titanium	50	50	650	768	759	236	236	218	218	1	7.9
Vanadium	50	50	110	149	145	78	78	70	70	3	10.8
Zinc	50	50	0				0		0		

LDC #: 05604-01M1
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Result Verification

Reviewer: CT
2nd Reviewer: MT

METHOD: Metals by ICP (EPA SW 846 Method 6020/7471A)

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike recovery MSD = Matrix spike duplicate recovery

MS/MSD samples: C15-SS14-0MS/C15-SS14-0MSD

Compound	Spike Added (mg/Kg)		Sample Concentration (mg/Kg)	Spiked Sample Concentration (mg/Kg)		MS Percent Recovery		MSD Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Arsenic	50	50	7.4	45.3	44.7	76	76	75	75	1	1.6
Cadmium	50	50	0.17	41.5	41.6	83	83	83	83	0.2	0.2
Lead	50	50	13	56.6	56.8	87	87	88	88	0.4	0.5
Selenium	50	50	0.30	31.6	33.6	63	63	67	67	6	6.2
Thallium	50	50	0.21	45.5	45.3	91	91	90	90	0.4	0.4
Zinc	50	50	43	80.3	80.4	75	75	75	75	0.1	0.3
Mercury	0.800	0.800	0.090	0.949	0.983	107	107	112	112	4	3.9

LDC #: 06604-04A4
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
LCS Results Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B)

The percent recoveries (%R) were calculated for ICAP Metals using the following calculation:

Percent recovery (%R) = 100 * (C/N)

Where:
N = ___Mean Calibration Factor or ___Nominal Amount
C = ___Continuing Calibration Factor or ___Calculated Amount

Standard ID	Analysis Date	Signal	Compound	N Actual (conc.)	C Found (conc.)	Recalculated %R	Reported %R	% Difference
LCS	1/11/2006	1	Al	50	47.0	94	94	0.0
(6A10109)		1	Sb	50	49.1	98	98	0.2
		1	Ba	50	44.1	88	88	0.2
		1	Be	50	46.7	93	93	0.4
		1	B	50	50.4	101	101	-0.2
		1	Ca	250	239	96	96	-0.4
		1	Cr	50	47.8	96	96	-0.4
		1	Co	50	46.6	93	93	0.2
		1	Cu	50	45.2	90	90	0.4
		1	Fe	50	51.8	104	104	-0.4
		1	Mg	250	239	96	96	-0.4
		1	Mn	50	47.6	95	95	0.2
		1	Mo	50	46.3	93	93	-0.4
		1	Ni	50	46.4	93	93	-0.2
		1	K	500	465	93	93	0.0
		1	Ag	25	23.8	95	95	0.2
		1	Na	500	489	98	98	-0.2
		1	Ti	50	48.0	96	96	0.0
		1	V	50	46.8	94	94	-0.4

LDC #: 0604-01A4
SDG #: S6011/6

VALIDATION FINDINGS WORKSHEET
LCS Results Verification

Reviewer: CT
2nd Reviewer: NP

METHOD: Metals by ICPMS (EPA SW 846 Method 6020)

The percent recoveries (%R) were calculated for ICAP Metals using the following calculation:

Percent recovery (%R) = 100 * (C/N)

Where:
N = ___Mean Calibration Factor or ___Nominal Amount
C = ___Continuing Calibration Factor or ___Calculated Amount

Standard ID	Analysis Date	Signal	Compound	N Actual (conc.)	C Found (conc.)	Recalculated %R	Reported %R	% Difference
LCS	1/11/2006	1	As	50	46.5	93	93	0.0
(6A10111)		1	Cd	50	44.6	89	89	0.2
		1	Pb	50	46.4	93	93	-0.2
		1	Se	50	44.0	88	88	0.0
		1	Tl	50	47.5	95	95	0.0
		1	Zn	50	46.6	93	93	0.2

LDC #: 0604-01A1
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: CJ
2nd Reviewer: NE

METHOD: Mercury by CVAA (EPA SW846 7471)

Compound results for all level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax * m)(Vt)(Df)}{(Vo)}$$

Where:
- Ax = Area or height of the peak for the compound to be measured
- 1/m = Slope
- c = Intercept
- Vt = Volume of the concentrated extract
- DF = Dilution factor
- Vo = Volume or weight of sample extracted

#	Sample I.D.	Analyte	Response (A/H)	m	c	Extract Volume (mL)	Dilution Factor	Sample wt/vol (g)	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	% Diff	Accept (Y/N)
1	3	Hg	0.0046	8.68E-03	0.0003	50	1	0.5	0.049	0.053	8.2	Y
2	10	Hg	0.0137	8.68E-03	3.00E-04	50	1	0.5	0.15	0.16	5.2	Y

LDC #: 0604-01A4
SDG #: 3601116

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B)

Compound results for all level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Cx)(Vt)(Df)}{(Vo)(\%M)}$$

Where:
Cx = Raw data concentration
Vt = Final Extract Volume
DF = Dilution factor
Vo = Volume or weight of sample extracted
%M = Percent moisture, applicable to soils and solids matrices only. (For water, %S = 1)

#	Sample I.D.	Compound	Raw Data Conc. (A/H)	Final Volume (mL)	Dilution Factor	Sample wt/vol (g)	% moi	Reported Concentration (mg/Kg)	Calculated Concentration (mg/Kg)	% Diff	Acc (Y/N)
1	C15-SS25-0	Al	587.9	50	1	2	1	15,000	14,846	-1.0	Y
		Sb	0.0511	50	1	2	1	1.30	1.29	-0.7	Y
		Ba	7.818	50	1	2	1	200	197	-1.3	Y
		Be	0.0244	50	1	2	1	0.61	0.62	1.0	Y
		B	0.3213	50	1	2	1	8.0	8.1	1.4	Y
		Ca	89.35	50	1	2	1	2,200	2,256	2.6	Y
		Cr	2.39	50	1	2	1	60	60	0.6	Y
		Co	0.9165	50	1	2	1	23	23	0.6	Y
		Cu	1.849	50	1	2	1	46	47	1.5	Y
		Fe	518.2	50	2	2	1	26,000	26,172	0.7	Y
		Mg	248.1	50	1	2	1	6,200	6,265	1.1	Y
		Mn	36.6	50	1	2	1	920	924	0.5	Y
		Mo	0.0197	50	1	2	1	0.49	0.50	1.5	Y
		Ni	1.429	50	1	2	1	36	36	0.2	Y
		K	109.7	50	1	2	1	2,700	2,770	2.6	Y
		Na	2.871	50	1	2	1	72	73	0.7	Y
		Ti	31.68	50	1	2	1	790	800	1.3	Y
		V	3.393	50	1	2	1	85	86	0.8	Y

LDC #: 0604-01A4
SDG #: 560116

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B)

Compound results for all level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Cx)(Vt)(Df)}{(Vo)(\%M)}$$

Where:
Cx = Raw data concentration
Vt = Final Extract Volume
DF = Dilution factor
Vo = Volume or weight of sample extracted
%M = Percent moisture, applicable to soils and solids matrices only. (For water, %S = 1)

#	Sample I.D.	Compound	Raw Data Conc. (A/H)	Final Volume (mL)	Dilution Factor	Sample wt/vol (g)	% moi	Reported Concentration (mg/Kg)	Calculated Concentration (mg/Kg)	% Diff	Acc (Y/N)
1	C15-SS15-0	Al	645.5	50	1	2	1	16,000	16,301	1.9	Y
		Sb	0.0386	50	1	2	1	0.97	0.97	0.5	Y
		Ba	6.548	50	1	2	1	160	165	3.3	Y
		Be	0.0316	50	1	2	1	0.79	0.80	1.0	Y
		B	0.3472	50	1	2	1	8.7	8.8	0.8	Y
		Ca	101.7	50	1	2	1	2,500	2,568	2.7	Y
		Cr	2.337	50	1	2	1	58	59	1.8	Y
		Co	0.787	50	1	2	1	20	20	-0.6	Y
		Cu	1.75	50	1	2	1	44	44	0.4	Y
		Fe	610.8	50	2	2	1	31,000	30,848	-0.5	Y
		Mg	160.3	50	1	2	1	4,000	4,048	1.2	Y
		Mn	29.78	50	1	2	1	740	752	1.6	Y
		Mo	0.0208	50	1	2	1	0.52	0.53	1.0	Y
		Ni	1.317	50	1	2	1	33	33	0.8	Y
		K	94.25	50	1	2	1	2,400	2,380	-0.8	Y
		Na	2.353	50	1	2	1	59	59	0.7	Y
		Ti	26.53	50	1	2	1	660	670	1.5	Y
		V	4.063	50	1	2	1	100	103	2.6	Y

LDC #: 0604-01A4
SDG #: 3600116

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICPMS (EPA SW 846 Method 6020)

Compound results for all level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Cx)(Vt)(Df)}{(Vo)(\%M)}$$

Where:
Cx = Raw data concentration
Vt = Final Extract Volume
DF = Dilution factor
Vo = Volume or weight of sample extracted
%M = Percent moisture, applicable to soils and solids matrices only. (For water, %S = 1)

#	Sample I.D.	Compound	Raw Data Conc. (A/H)	Final Volume (mL)	Dilution Factor	Sample wt/vol (g)	% moi	Reported Concentration (mg/Kg)	Calculated Concentration (mg/Kg)	% Diff	Acc (Y/N)
1	C15-SS25-0	As	12.19187	50	0.02	2	1	6.10	6.16	0.9	Y
		Cd	0.54463	50	0.02	2	1	0.27	0.28	1.9	Y
		Pb	28.33238	50	0.02	2	1	14	14	2.2	Y
		Se	0.5183	50	0.02	2	1	0.26	0.26	0.7	Y
		Tl	0.3639	50	0.02	2	1	0.18	0.2	2.1	Y
		Zn	244.32247	50	0.02	2	1	120	123	2.8	Y
	C15-SS15-0	As	15.40871	50	0.02	2	1	7.70	7.78	1.1	Y
		Cd	1.21403	50	0.02	2	1	0.61	0.61	0.5	Y
		Pb	70.75501	50	0.02	2	1	35	36	2.1	Y
		Se	1.05604	50	0.02	2	1	0.53	0.53	0.6	Y
		Tl	0.29441	50	0.02	2	1	0.15	0.1	-0.9	Y
		Zn	186.66047	50	0.02	2	1	93	94	1.4	Y

LDC #: 06 04 -01 AM
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CJ
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B/6020/7471A)

The relative percent difference (RPD) of field duplicates were recalculated for the compounds identified below using the following calculation:

RPD = | Conc1 - Conc2 | * 200/(Conc1 + Conc2)

Compound	Concentration (mg/kg)		
	C15-SS22-0	C15-SS22D-0	RPD
Aluminum	14000	14000	0.0
Arsenic	7.1	7.2	1.4
Barium	170	170	0.0
Beryllium	0.74	0.70	5.6
Boron	9.0	8.0	12
Cadmium	0.22	0.18	20
Calcium	2400	2300	4.3
Chromium	56	58	3.5
Cobalt	17	19	11
Copper	39	42	7.4
Iron	31000	27000	14
Lead	15	15	0.0
Magnesium	4300	4500	4.5
Manganese	790	700	12
Mercury	0.095	0.092	3.2
Molybdenum	0.46	0.40	14
Nickel	32	31	3.2
Potassium	2100	2300	9.1
Selenium	0.39	0.21	60
Sodium	47	57	19
Thallium	0.16	0.15	6.5
Titanium	630	690	9.1
Vanadium	94	94	0.0
Zinc	46	49	6.3

LDC #: 0604-01A1
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CT
2nd Reviewer: NE

METHOD: Metals by ICP (EPA SW 846 Method 6010B/6020/7471A)

The relative percent difference (RPD) of field duplicates were recalculated for the compounds identified below using the following calculation:

RPD = | Conc1 - Conc2 | * 200/(Conc1 + Conc2)

Compound	Concentration (mg/kg)		
	C15-SS17-0	C15-SS17D-0	RPD
Aluminum	20000	14000	35
Antimony	1.6	0.90	56
Arsenic	6.7	6.0	11
Barium	200	160	22
Beryllium	0.80	0.70	13
Boron	9.0	6.9	26
Cadmium	0.12	0.23	63
Calcium	2100	2300	9.1
Chromium	74	55	29
Cobalt	19	18	5.4
Copper	46	39	16
Iron	35000	27000	26
Lead	11	13	17
Magnesium	6100	4900	22
Manganese	570	700	20
Mercury	0.093	0.093	0.0
Molybdenum	0	0.34	200
Nickel	37	29	24
Potassium	3400	3100	9.2
Selenium	0.32	0.26	21
Sodium	46	45	2.2
Thallium	0.20	0.16	22
Titanium	890	680	27
Vanadium	110	98	12
Zinc	47	47	0.0

Aerojet Site PGOU
Data Validation Reports
LDC# 0604-02

Chromium VI

LDC Report# 0604-02A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Aerojet Site PGOU
Collection Date:	January 5, 2006
LDC Report Date:	May 1, 2006
Matrix:	Soil
Parameters:	Chromium VI
Validation Level:	EPA Level III & IV equivalent
Laboratory:	Sequoia/Del Mar - Irvine
Sample Delivery Group (SDG):	S601116

Sample Identification

C15-SS22-0	C15-SS15-0**
C15-SS22D-0	C15-SS12-0
C15-SS25-0**	C15-SS20-0
C15-SS26-0	C15-SS17-0
C15-SS24-0	C15-SS17D-0
C15-SS21-0	C15-SS23-0
C15-SS18-0	C15-SS16-0
C15-SS13-0	C15-SS19-0
C15-SS14-0	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 17 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 7199 for Chromium VI.

The 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 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 III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent an EPA Level IV review. An EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is 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

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Continuing calibration verification was performed at the required frequencies and analysis criteria were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. 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
C15-SS23-0 (C15-SS23-0 C15-SS16-0)	Chromium VI	5 (55-110)	13 (55-110)	90 (20)	R non-detects J detects	A
C15-SS19-0 (C15-SS19-0)	Chromium VI	21 (55-110)	22 (55-110)	5 (20)	R non-detects J detects	A

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The laboratory analyzed and reported another client's MS/MSD samples, which were prepared in the same analytical batch (6A17073) as the project's samples. Although the MS/MSD results were within QC criteria, matrix-specific effects cannot be assessed from a direct correlation of a spike on another client's sample to the project samples. Since only the associated parent sample results are qualified for MS/MSD failure, this MS/MSD data was not considered usable for the associated samples. Therefore, samples were not qualified where another client's MS/MSD was used.

V. Duplicates

Duplicate (DUP) sample analyses were not performed. Therefore, this parameter was not evaluated.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were within validation criteria for samples on which an EPA Level IV review was performed.

Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples C15-SS22-0 and C15-SS22D-0 and samples C15-SS17-0 and C15-SS17D-0 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/kg)		RPD
	C15-SS22-0	C15-SS22D-0	
Chromium VI	ND	0.022	NA

Relative percent differences (RPDs) are not calculated when an analyte is nondetected in one field duplicate sample or is detected below the reporting limit in one or both field duplicate samples.

Aerojet PGOU
Wet Chemistry - Data Qualification Summary - SDG S601116

SDG	Sample	Analyte	Flag	A or P	Reason
S601116	C15-SS23-0 C15-SS16-0 C15-SS19-0	Chromium VI	R non-detects J detects	A	Matrix spike recoveries < 30%

Aerojet PGOU
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG S601116

No Sample Data Qualified in this SDG

Sequoia Analytical

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

INORGANICS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS22-0 (S601116-01) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.43**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS22D-0 (S601116-02) Soil Sampled: 01/05/06 11:03 Received: 01/05/06 16:56										
Chromium VI	**0.022**	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	J
pH	**6.43**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS25-0 (S601116-03) Soil Sampled: 01/05/06 11:05 Received: 01/05/06 16:56										
Chromium VI	**0.079**	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	J
pH	**6.33**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS26-0 (S601116-04) Soil Sampled: 01/05/06 11:30 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.67**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS24-0 (S601116-05) Soil Sampled: 01/05/06 11:32 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.65**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS21-0 (S601116-06) Soil Sampled: 01/05/06 11:55 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.54**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS18-0 (S601116-07) Soil Sampled: 01/05/06 11:57 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.27**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3

CJ 4/27/06

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.

Sequoia Analytical

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

INORGANICS
Del Mar Analytical, Irvine

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS13-0 (S601116-08) Soil Sampled: 01/05/06 12:20 Received: 01/05/06 16:56										
Chromium VI	**0.058**	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	J
pH	**6.32**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS14-0 (S601116-09) Soil Sampled: 01/05/06 12:22 Received: 01/05/06 16:56										
Chromium VI	**0.069**	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	J
pH	**6.71**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS15-0 (S601116-10) Soil Sampled: 01/05/06 13:55 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.36**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS12-0 (S601116-11) Soil Sampled: 01/05/06 14:00 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.23**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS20-0 (S601116-12) Soil Sampled: 01/05/06 14:28 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.35**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS17-0 (S601116-13) Soil Sampled: 01/05/06 14:30 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.22**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3
C15-SS17D-0 (S601116-14) Soil Sampled: 01/05/06 14:30 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A17073	01/17/06	01/17/06	EPA 7199	
pH	**6.32**	0.00	0.00	pH Units	"	6A10110	01/10/06	01/10/06 15:00	EPA 9045C	H3

01/27/06

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ERM-West - Sacramento	Project:Aerojet PGOU	S601116
2525 Natomas Park Dr., Ste. 350	Project Number:-	**Reported:**
Sacramento CA, 95833	Project Manager:Bruce Lewis	01/27/06 14:31

INORGANICS
Del Mar Analytical, Irvine

DU Qual

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C15-SS23-0 (S601116-15) Soil Sampled: 01/05/06 14:40 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A18044	01/18/06	01/18/06	EPA 7199	M2 R
pH	**6.82**	0.00	0.00	pH Units	"	6A10112	01/10/06	01/10/06 16:30	EPA 9040B	H3
C15-SS16-0 (S601116-16) Soil Sampled: 01/05/06 15:10 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A18044	01/18/06	01/18/06	EPA 7199	
pH	**6.19**	0.00	0.00	pH Units	"	6A10112	01/10/06	01/10/06 16:30	EPA 9040B	H3 R
C15-SS19-0 (S601116-17) Soil Sampled: 01/05/06 15:15 Received: 01/05/06 16:56										
Chromium VI	ND	0.020	0.20	mg/kg	1	6A19109	01/19/06	01/20/06	EPA 7199	M2 R
pH	**7.19**	0.00	0.00	pH Units	"	6A10112	01/10/06	01/10/06 16:30	EPA 9040B	H3

CJ
1/27/06

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.

LDC #: 0604-02A6

SDG #: S601116

Laboratory: Sequoia/Delmar

VALIDATION COMPLETENESS WORKSHEET

✓ EPA Level III/IV

Date: 4/24/06

Page: 1 of 1

Reviewer: CJ

2nd Reviewer: NE

METHOD: EPA Method 7199 (Chromium VI)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/5/2006
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IVa.	Matrix Spike/Matrix Spike Duplicates	SW	non-client sample
IVb.	Laboratory control samples	A	
V.	Sample result verification	A	Not reviewed for Level III validation
VI.	Overall assessment of data	A	
VII.	Field duplicates	SW	
VIII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	C15-SS22-0	11	C15-SS12-0	21		31	
2	C15-SS22D-0	12	C15-SS20-0	22		32	
3	C15-SS25-0 **	13	C15-SS17-0	23		33	
4	C15-SS26-0	14	C15-SS17D-0	24		34	
5	C15-SS24-0	15	C15-SS23-0	25		35	
6	C15-SS21-0	16	C15-SS16-0	26		36	
7	C15-SS18-0	17	C15-SS19-0	27		37	
8	C15-SS13-0	18		28		38	
9	C15-SS14-0	19		29		39	
10	C15-SS15-0 **	20		30		40	

Notes:

LDC #: 0604-02A6
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: CT
2nd reviewer: VE

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
Y N N/A Were all cooler temperatures within validation criteria? 15°C/7°C

Methods:		Method 7199				
Parameters:		Chromium VI				
Technical holding time:		28 Days				
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
C15-SS22-0	1/5/2006	1/17/2006				None
C15-SS22D-0	1/5/2006	1/17/2006				None
C15-SS25-0 **	1/5/2006	1/17/2006				None
C15-SS26-0	1/5/2006	1/17/2006				None
C15-SS24-0	1/5/2006	1/17/2006				None
C15-SS21-0	1/5/2006	1/17/2006				None
C15-SS18-0	1/5/2006	1/17/2006				None
C15-SS13-0	1/5/2006	1/17/2006				None
C15-SS14-0	1/5/2006	1/17/2006				None
C15-SS15-0 **	1/5/2006	1/17/2006				None
C15-SS12-0	1/5/2006	1/17/2006				None
C15-SS20-0	1/5/2006	1/17/2006				None
C15-SS17-0	1/5/2006	1/17/2006				None
C15-SS17D-0	1/5/2006	1/17/2006				None
C15-SS23-0	1/5/2006	1/18/2006				None
C15-SS16-0	1/5/2006	1/18/2006				None
C15-SS19-0	1/5/2006	1/19/2006				None

LDC#: 0604-01A6
SDG#: 8001116

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: CT
2nd Reviewer: KB

Method: Chromium IV (EPA SW 846 Method 7199)

Calibration Date	Detector	Compound	Standard	(Y) height	(X) Concentration
1/5/2006		Cr IV	Point 1	0	0.0001
			Point 2	23.16	0.3
			Point 3	60.13	1
			Point 4	257.31	5
			Point 5	528.32	10
			Point 6	1289.28	25
			Point 7	2514.51	50
			Point 8	4964.49	100

Regression Output

Constant	b	*1.79469E+01*
Std Err of Y Est		
R Squared		*0.99990*
Degrees of Freedom		
X Coefficient(s)	m	*4.96269E+01*
Std Err of Coef.		
Correlation Coefficient		*0.99995*
Coefficient of Determination (r^2)		*0.99990*

LDC #: S604-02A6
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: CT
2nd Reviewer: KE

METHOD: Chromium VI by IC (EPA method 7199)

The percent recoveries (%R) of the calibration standards were calculated for the analytes identified below using the following calculation:
%R = (AF * 100)/AS
Where:
AF = Analyte Found
AS = Analyte Spiked

Type of Analysis	Analyte	Standard ID	Found (peak area)	Spiked (Amount)	Percent Recovery		Accept? (Y/N)	Limits
					Reported	Calc'd		
Calibration Verification 1/17/06 (6:58)	Chromium VI	CCV	44.793	50.0	NA	90	N	90-110%
Calibration Verification 1/17/06 (20:47)	Chromium VI	CCV	46.675	50.0	NA	93	Y	90-110%
Calibration Verification 1/17/06 (22:00)	Chromium VI	CCV	49.200	50.0	NA	98	Y	90-110%
Calibration Verification 1/18/06 (14:51)	Chromium VI	CCV	51.161	50.0	NA	102	Y	90-110%
Calibration Verification 1/20/06 (13:41)	Chromium VI	CCV	47.221	50.0	NA	94	Y	90-110%

LDC #: 0604-02A6
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: CT
2nd Reviewer: NE

METHOD: Chromium VI, EPA Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 55-110? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤20% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	1/18/06	15MS/15MSD	Soil	Cr VI	5 (55-110)	13 (55-110)	90 (20)	15, 16	R/J
2	1/19/06	17MS/17MSD	Soil	Cr VI	21 (55-110)	22 (55-110)	5 (20)	17	R/J

Comments:

LDC #: 0604-02A6
SDG #: S601116

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample and Matrix Spike/Matrix Spike Duplicates Result Verification

Page: 1 of 1
Reviewer: CJ
2nd Reviewer: NB

METHOD: Chromium VI by IC (EPA method 7119)

The percent recoveries (%R) of the laboratory control sample and %R relative percent differences (RPD) of the matrix spike and matrix spike duplicate were calculated for perchlorate below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD = | LFB - LFBD | * 2/(LFB + LFBD)

LFB = Laboratory Fortified Blank
LFBD = Laboratory Fortified Blank duplicate recovery

LFB sample: 6A17073-BS1

Compound	Spike Added (mg/kg)		Sample Concentration (mg/kg)	Spiked Sample Concentration (mg/kg)		LFB Percent Recovery		LFBD Percent Recovery		LFB/LFBD RPD	
	LFB	LFBD	---	LFB	LFBD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Chromium VI	5.000	NA	0	3.650	NA	73	73	NA	NA	NA	NA

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike recovery MSD = Matrix spike duplicate recovery

MS/MSD samples: 6A17073MS1 & 6A17073MSD1

Compound	Spike Added (mg/kg)		Sample Concentration (mg/kg)	Spiked Sample Concentration (mg/kg)		MS Percent Recovery		MSD Percent Recovery		MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Chromium VI	5.00	5.00	0	3.630	3.730	71	71	73	73	3	3

non client sample

LDC #: 06004-02A6
SDG #: J6001116

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: CJ
2nd Reviewer: NE

METHOD: Chromium IV by IC (EPA SW846 7199)

Compound results for all level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax * m)(Vt)(Df)}{(Vo)}$$

Where:
Ax = Area or height of the peak for the compound to be measured
1/m = Slope
c = Intercept
Vt = Volume of the concentrated extract
DF = Dilution factor
Vo = Volume or weight of sample extracted

#	Sample I.D.	Analyte	Response (A/H)	m	c	Extract Volume (mL)	Dilution Factor	Sample wt/vol (g)	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	% Diff	Accept (Y/N)
1	3	Cr VI	1047.75	4.96E+01	17.946941	1	1	0.5	0.079	0.078	-1.1	Y

LDC #: 0604-02A6

SDG #: S601116

VALIDATION FINDING WORKSHEET

Field Duplicates

Reviewer: CJ

2nd reviewer: NZ

METHOD: Chromium VI (EPA method 7199)

Y N NA Were field duplicate pairs identified in this SDG?

Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/Kg)		RPD (Limits)	Difference (Limits)	Qualifications
	C15-SS22-0	C15-SS22D-0			
Chromium VI	ND	0.022	200		

Compound	Concentration (mg/Kg)		RPD (Limits)	Difference (Limits)	Qualifications
	C15-SS17-0	C15-SS17D-0			
Perchlorate	ND	ND	NA		

Notes: