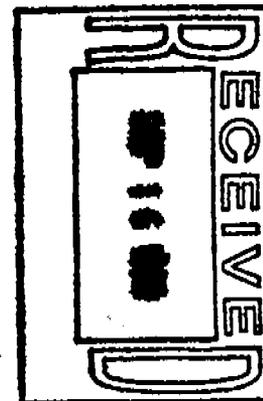
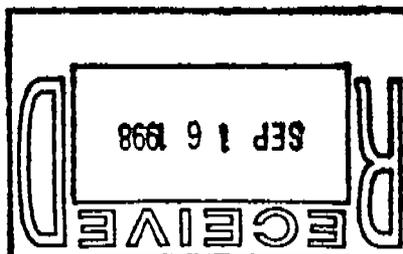




September 01, 1998



Karuna Mirchandani  
Parsons Engineering Science, Inc.  
8000 Centre Park  
Suite 200  
Austin, TX 78754  
TEL: (512) 719-6054  
FAX (512) 719-6099



RE: CSSA

Order No.: 9807141

Dear Karuna Mirchandani,

DHL Analytical received 2 samples on 7/31/98 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Scott Schroeder  
Lab Manager

CC:



DHL Analytical

Sample Receipt Checklist

Client Name PARSON

Date and Time Receive

7/31/98

Work Order Number 9807141

Received by JV

Checklist completed by

Jacob Vasquez 7/31/98  
Signature Date

Reviewed by

JB 7/31/98  
Initials Date

Matrix:

Carrier name: FedEx Priority

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No
- Water - VOA vials have zero headspace? No VOA vials submitted  Yes  No
- Water - pH acceptable upon receipt? N/A Yes  No

Adjusted? \_\_\_\_\_ Checked by \_\_\_\_\_

Any No and/or NA (not applicable) response must be detailed in the comments section below

Client contacted \_\_\_\_\_ Date contacted: \_\_\_\_\_ Person contacted \_\_\_\_\_

Contacted by: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments: \_\_\_\_\_

Corrective Action \_\_\_\_\_

CLIENT: Parsons Engineering Science, Inc.  
Project: CSSA  
Lab Order: 9807141

**CASE NARRATIVE**

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition  
Method 1311 – TCLP Extraction  
Method 8260B – Volatile Analysis for TCLP Compounds  
Method 6010B - ICP Analysis for cadmium and lead

**SUMMARY**

The liquid waste sample (IDW-98-GW) is below TCLP limits for all volatile compounds on the TCLP list. All compounds were below detection limits.

The solid waste sample (IDW-98-B3) is below TCLP limits for all volatile compounds on the TCLP list and for cadmium and lead. All volatile compounds were below detection limits and lead was below detection limits. Cadmium was detected with a value flagged "F" which is below reporting limit but above MDL.

**LOG-IN**

Sample log-in was performed 7/31/98. During log-in, no discrepancies were noted. As shown on the log-in checklist, all samples were in good condition, properly packaged, and the chain of custody matched the samples received. The log-in analyst determined that the samples were received at the proper temperature (0.6C). The samples were then processed for analysis.

A total of 2 samples were received: the first being a liquid sample collected in 4 separate containers, and the second a solid sample collected in two containers. The liquid sample was processed for TCLP volatile analysis and the solid sample was processed for TCLP volatiles and TCLP cadmium/lead.

**TCLP EXTRACTIONS**

The liquid sample, IDW-98-GW was determined to contain less than 0.5% solid material and according to the TCLP method, the liquid portion is considered to be the TCLP leachate. It was prepared by separating the solids from the liquid and the liquid was then analyzed directly by GC/MS method 8260B on 7/31/98.

The solid sample, IDW-98-B3 was visually examined in accordance with Method 1311, and determined to have no free liquids present. For the TCLP metals extraction, the analyst determined that extraction fluid #2 was required for extraction as per the method. Extraction began on 8/11/98 and concluded the

**CLIENT:** Parsons Engineering Science, Inc.  
**Project:** CSSA  
**Lab Order:** 9807141

## CASE NARRATIVE

following day. A method blank was included with the TCLP batch. After tumbling the extract was filtered and digested per method protocols.

For the volatile extraction of the solid sample, IDW-98-B3 was extracted using fluid #1 as per the method. Zero Headspace Extraction (ZHE) began on 8/5/98 and concluded the following day. A method blank was included with the TCLP batch. After tumbling the extract was filtered and analyzed the same day as per method protocols.

For volatile reporting, the holding time report (Form O-9) indicates that the TCLP samples for volatiles analysis have a maximum holding time of 14 days. This does not reflect the total holding time allowance per the method which is 14 days from collection until TCLP extraction and then 14 days until analysis. However all volatile analyses were completed within 14 days so no discrepancy is noted. This AFCEE form does not allow reporting of the individual dates for TCLP extraction and method extraction and analysis.

Likewise AFCEE form I-8 indicates that the TCLP samples for cadmium and lead analysis have a maximum holding time of 180 days. This does not reflect the total holding time allowance per the method which is 180 days from collection until TCLP extraction and then 180 days until digestion and analysis. However all metals analyses were completed within 180 days so no discrepancy is noted. The breakdown of the holding time for extractions is as follows:

Method	Date of Extr.	Holding time
TCLP Extraction Liquid Sample (Vol):	7/31	1 Days
TCLP Extraction Solid Sample (Vol):	8/5	6 Days
TCLP Extraction Solid Sample (Cd/Pb):	8/11	8 Days
Volatiles analysis Liquid Sample TCLP:	7/31	0 Days
Volatiles analysis Solid Sample TCLP:	8/6	0 Days
Metals Analysis Solid Sample TCLP:	8/14	3 Days

### VOLATILE ANALYSIS - 8260B

Preparation batch 1752 included the liquid sample (IDW-98-GW) for TCLP analysis, and it was analyzed 7/31/98. The batch included a method blank, LSC, 20 samples and an MS/MSD. This meets EPA method 8260B criteria; however due to miscommunication, the sample selected for the MS/MSD was not the project sample which varies from AFCEE protocol. The spike list of compounds includes an MS/MSD short list of analytes, not the entire target list. Corrective actions are in place to prevent recurrence.

---

**CLIENT:** Parsons Engineering Science, Inc.  
**Project:** CSSA  
**Lab Order:** 9807141

---

**CASE NARRATIVE**

The MDLs are higher than the AFCEE RLs for the following compounds:

	MDL	AFCEE RL
1,4 dichlorobenzene	0.55	0.3
benzene	0.56	0.4
chlorobenzene	0.48	0.4
chloroform	0.49	0.3
hexachlorobutadiene	1.15	1.1

Compound 2 butanone (MEK) does not have published AFCEE RLs. The reason that AFCEE RLs were not met is because this sample is a TCLP and the possibility of high level contamination exists. Therefore, the sample was analyzed using a slightly less sensitive 8260B procedure that has a higher MDL but it protects the instrument from high level contamination. This does not affect the results because the TCLP limits far exceed the DHL MDLs.

Preparation batch 1827 included the soil sample (IDW-98-B3) for TCLP analysis, and it was analyzed 8/14/98. The batch included a method blank from the ZHE, LSC, 12 samples and an MS/MSD. This meets EPA method 8260B criteria; however due to miscommunication, the sample selected for the MS/MSD was not the project sample which varies from AFCEE protocol. The spike list of compounds includes an MS/MSD short list of analytes, not the entire target list. Corrective actions are in place to prevent recurrence.

The MDLs are higher than the AFCEE RLs for the following compounds:

	MDL	AFCEE RL
1,4 dichlorobenzene	0.55	0.3
benzene	0.56	0.4
chlorobenzene	0.48	0.4
chloroform	0.49	0.3
hexachlorobutadiene	1.15	1.1

Compound 2 butanone (MEK) does not have published AFCEE RLs. The reason that AFCEE RLs were not met is because this sample is a TCLP and the possibility of high level contamination exists. Therefore, the sample was analyzed using a slightly less sensitive 8260B procedure that has a higher MDL but it protects the instrument from high level contamination. This does not affect the results because the TCLP limits far exceed the DHL MDLs.

The form O-5 includes the SPCC and CCC data for the ICV results of both batches for 8260B. DHL uses Method 8260B criteria for the CCCs and SPCC compounds. The AFCEE QAPP Ver 1 and 2 incorrectly use the 8240 criteria for these compounds in its table for 8260A. Therefore it appears that

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**CLIENT:** Parsons Engineering Science, Inc.  
**Project:** CSSA  
**Lab Order:** 9807141

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**CASE NARRATIVE**

these do not meet AFCEE criteria, but the criteria as published in the AFCEE QAPP are not correct.

The LCS control limits used by DHL are not the same as the AFCEE limits. Ours are more stringent than the AFCEE limits.

ICP Analysis by 6010B

The TCLP extract of IDW-98-B3 was included in metals digestion prep batch 1844 on 8/14/98. This batch included a TCLP method blank, an LCS, four samples, and an MS/MSD. The TCLP extract of sample IDW-98-B3 was selected as the MS/MSD. The calibration standards, interference check standards, blanks, LCS, and MS/MSD are within control limits for the entire analysis.

**DHL Analytical**

Date: 01-Sep-98

**CLIENT:** Parsons Engineering Science, Inc.  
**Project Name:** CSSA  
**Project No:** 728487.03  
**Lab Order:** 9807141

**Client Sample ID:** IDW-98-GW  
**Lab ID:** 9807141-01B  
**Collection Date:** 7/30/98 5:00:00 PM  
**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	TCLP Limits	DF	Date Analyzed	
<b>VOLATILES BY GC/MS</b>		<b>SW8260B</b>					<b>Analyst: FL</b>	
1,1-Dichloroethene	ND	5		µg/L	700	1	7/31/98 6:16:00 PM	
1,2-Dichloroethane	ND	5		µg/L	500	1	7/31/98 6:16:00 PM	
1,4-Dichlorobenzene	ND	5		µg/L	7500	1	7/31/98 6:16:00 PM	
2-Butanone	ND	50		µg/L	200000	1	7/31/98 6:16:00 PM	
Benzene	ND	5		µg/L	500	1	7/31/98 6:16:00 PM	
Carbon tetrachloride	ND	5		µg/L	500	1	7/31/98 6:16:00 PM	
Chlorobenzene	ND	5		µg/L	100000	1	7/31/98 6:16:00 PM	
Chloroform	ND	5		µg/L	6000	1	7/31/98 6:16:00 PM	
Hexachlorobutadiene	ND	5		µg/L	500	-1	7/31/98 6:16:00 PM	
Tetrachloroethene	ND	5		µg/L	700	1	7/31/98 6:16:00 PM	
Trichloroethene	ND	5		µg/L	500	1	7/31/98 6:16:00 PM	
Vinyl chloride	ND	5		µg/L	200	1	7/31/98 6:16:00 PM	
Surr: 1,2-Dichloroethane-d4	92.8	62-139		%REC	0	1	7/31/98 6:16:00 PM	
Surr: 4-Bromofluorobenzene	102.7	75-125		%REC	0	1	7/31/98 6:16:00 PM	
Surr: Dibromofluoromethane	100.5	75-125		%REC	0	1	7/31/98 6:16:00 PM	
Surr: Toluene-d8	101.6	75-125		%REC	0	1	7/31/98 6:16:00 PM	

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits  
 J - Analyte detected below quantitation limits      R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank      E - Value above quantitation range  
 \* - Value exceeds TCLP Maximum Concentration Level

**DHL Analytical**

Date: 01-Sep-98

CLIENT: Parsons Engineering Science, Inc.  
 Project Name: CSSA  
 Project No: 728487.03  
 Lab Order: 9807141

Client Sample ID: IDW-98-B3  
 Lab ID: 9807141-02A  
 Collection Date: 7/30/98 5:30:00 PM  
 Matrix: SOIL

Analyses	Result	RL	Qual	Units	TCLP Limits	DF	Date Analyzed
<b>VOLATILES BY GC/MS</b>		<b>SW8260B</b>			<b>Analyst: FL</b>		
1,1-Dichloroethene	ND	5		µg/L	700	1	8/6/98 4:47:00 PM
1,2-Dichloroethane	ND	5		µg/L	500	1	8/6/98 4:47:00 PM
1,4-Dichlorobenzene	ND	5		µg/L	7500	1	8/6/98 4:47:00 PM
2-Butanone	ND	50		µg/L	200000	1	8/6/98 4:47:00 PM
Benzene	ND	5		µg/L	500	1	8/6/98 4:47:00 PM
Carbon tetrachloride	ND	5		µg/L	500	1	8/6/98 4:47:00 PM
Chlorobenzene	ND	5		µg/L	100000	1	8/6/98 4:47:00 PM
Chloroform	ND	5		µg/L	6000	1	8/6/98 4:47:00 PM
Hexachlorobutadiene	ND	5		µg/L	500	1	8/6/98 4:47:00 PM
Tetrachloroethene	ND	5		µg/L	700	1	8/6/98 4:47:00 PM
Trichloroethene	ND	5		µg/L	500	1	8/6/98 4:47:00 PM
Vinyl chloride	ND	5		µg/L	200	1	8/6/98 4:47:00 PM
Surr: 1,2-Dichloroethane-d4	86.9	62-139		%REC	0	1	8/6/98 4:47:00 PM
Surr: 4-Bromofluorobenzene	100.8	75-125		%REC	0	1	8/6/98 4:47:00 PM
Surr: Dibromofluoromethane	99.2	75-125		%REC	0	1	8/6/98 4:47:00 PM
Surr: Toluene-d8	100.3	75-125		%REC	0	1	8/6/98 4:47:00 PM

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 B - Analyte detected in the associated Method Blank  
 • - Value exceeds TCLP Maximum Concentration Level  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 E - Value above quantitation range

# DHL Analytical

Date: 01-Sep-98

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<b>CLIENT:</b> Parsons Engineering Science, Inc.	<b>Client Sample ID:</b> IDW-98-B3
<b>Project Name:</b> CSSA	<b>Lab ID:</b> 9807141-02B
<b>Project No:</b> 728487.03	<b>Collection Date:</b> 7/30/98 5:30:00 PM
<b>Lab Order:</b> 9807141	<b>Matrix:</b> SOIL

---

Analyses	Result	RL	Qual	Units	TCLP Limits	DF	Date Analyzed
<b>TCLP METALS</b>		<b>SW1311/8010B</b>					<b>Analyst: KLF</b>
Cadmium	0.00170	0.04	J	mg/L	1	1	8/14/98 11:25:00 AM
Lead	ND	0.5		mg/L	5	1	8/14/98 11:25:00 AM

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<b>Qualifiers:</b>	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	• - Value exceeds TCLP Maximum Concentration Level	



**DHL**  
ANALYTICAL

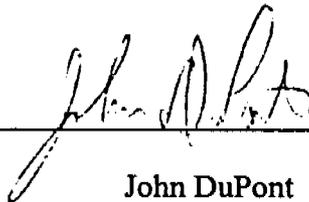
## QUALITY CONTROL REPORT

This quality control report for Parsons Engineering Science Project: CSSA/ Camp Stanley contains the following information:

- Method Blank data (Methods 8260 and 6010)
- Sample MS/MSD summary (Methods 8260 and 6010)
- Laboratory Control Spike summary (Methods 8260 and 6010)
- Initial Calibration Verification data (Method 8260)
- Continuing Calibration Verification summary (Methods 8260 and 6010)
- Continuing Calibration Blank summary (Methods 8260 and 6010)

September 1, 1998

Approved: \_\_\_\_\_



John DuPont

CLIENT: Parsons Engineering Science, Inc.

Work Order: 9807141

Project: CSSA

## QC SUMMARY REPORT

Method Blank

Sample ID: MB-1752	Batch ID: 1752	Test Code: SW8260B	Units: µg/L						
Run ID: GCMS2_980731A	Analysis Date: 7/31/98 9:57:00 AM	Prep Date: 7/31/98							
Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	ND	5							
1,2-Dichloroethane	ND	5							
1,4-Dichlorobenzene	ND	5							
2-Butanone (MEK)	ND	50							
Benzene	ND	5							
Carbon tetrachloride	ND	5							
Chlorobenzene	ND	5							
Chloroform	ND	5							
Hexachlorobutadiene	ND	5							
Tetrachloroethene	ND	5							
Trichloroethene	ND	5							
Vinyl chloride	ND	5							

Sample ID: MB-1788	Batch ID: 1789	Test Code: SW8260B	Units: µg/L						
Run ID: GCMS2_980806A	Analysis Date: 8/6/98 4:20:00 PM	Prep Date: 8/6/98							
Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	ND	5	0	0.0%	0	0			
1,2-Dichloroethane	ND	5	0	0.0%	0	0			
1,4-Dichlorobenzene	ND	5	0	0.0%	0	0			
2-Butanone (MEK)	ND	50	0	0.0%	0	0			
Benzene	ND	5	0	0.0%	0	0			
Carbon tetrachloride	ND	5	0	0.0%	0	0			
Chlorobenzene	ND	5	0	0.0%	0	0			
Chloroform	ND	5	0	0.0%	0	0			
Hexachlorobutadiene	ND	5	0	0.0%	0	0			
Tetrachloroethene	ND	5	0	0.0%	0	0			
Trichloroethene	ND	5	0	0.0%	0	0			
Vinyl chloride	ND	5	0	0.0%	0	0			

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Method Blank

Sample ID: MB-1789      Batch ID: 1789      Test Code: SW8260B      Units: µg/L  
 Run ID: GCMS2\_980806A      Analysis Date: 8/6/98 10:03:00 AM      Prep Date: 8/6/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	ND	5							
1,2-Dichloroethane	ND	5							
1,4-Dichlorobenzene	ND	5							
2-Butanone (MEK)	ND	50							
Benzene	ND	5							
Carbon tetrachloride	ND	5							
Chlorobenzene	ND	5							
Chloroform	ND	5							
Hexachlorobutadiene	ND	5							
Tetrachloroethene	ND	5							
Trichloroethene	ND	5							
Vinyl chloride	ND	5							

Sample ID: MB-1844      Batch ID: 1844      Test Code: SW1311/6010      Units: mg/L  
 Run ID: ICP\_980814A      Analysis Date: 8/14/98 10:53:00 AM      Prep Date: 8/14/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0012							
Cadmium	ND	0.0029							
Chromium	ND	0.012							
Lead	ND	0.014							

Sample ID: MB2-1844      Batch ID: 1844      Test Code: SW1311/6010      Units: mg/L  
 Run ID: ICP\_980814A      Analysis Date: 8/14/98 10:56:00 AM      Prep Date: 8/14/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0012							
Cadmium	ND	0.0029							
Chromium	ND	0.012							
Lead	ND	0.014							

Qualifiers:      ND - Not Detected at the Reporting Limit      R - RPD outside accepted recovery limits  
                     J - Analyte detected below quantitation limits      B - Analyte detected in the associated Method Blank  
                     S - Spike Recovery outside accepted recovery limits

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Sample Matrix Spike

Sample ID: 9807120-01B MS    Batch ID: 1752    Test Code: SW8260B    Units: µg/L  
 Run ID: GCMS2\_980731A    Analysis Date: 7/31/98 7:38:00 PM    Prep Date: 7/31/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	42.11	5	50	84.2%	75	125			
Benzene	47.94	5	50	95.9%	75	125			
Chlorobenzene	49.81	5	50	99.6%	75	125			
Trichloroethene	43.11	5	50	86.2%	75	125			

Sample ID: 9807120-01B MSD    Batch ID: 1752    Test Code: SW8260B    Units: µg/L  
 Run ID: GCMS2\_980731A    Analysis Date: 7/31/98 8:06:00 PM    Prep Date: 7/31/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	45.4	5	50	90.8%	75	125	7.5%	20	
Benzene	50.9	5	50	101.8%	75	125	6.0%	20	
Chlorobenzene	51.83	5	50	103.7%	75	125	4.0%	20	
Trichloroethene	45.96	5	50	91.9%	75	125	6.4%	20	

Sample ID: 9808014-02A MS    Batch ID: 1789    Test Code: SW8260B    Units: µg/L  
 Run ID: GCMS2\_980806A    Analysis Date: 8/6/98 1:38:00 PM    Prep Date: 8/6/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	43.29	5	50	86.6%	75	125			
Benzene	48.61	5	50	97.2%	75	125			
Chlorobenzene	52.29	5	50	104.6%	75	125			
Trichloroethene	56.03	5	50	99.4%	75	125			

Sample ID: 9808014-02A MSD    Batch ID: 1789    Test Code: SW8260B    Units: µg/L  
 Run ID: GCMS2\_980806A    Analysis Date: 8/6/98 2:05:00 PM    Prep Date: 8/6/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	43.3	5	50	86.6%	75	125	0.0%	20	
Benzene	48.74	5	50	97.5%	75	125	0.3%	20	
Chlorobenzene	53.14	5	50	106.3%	75	125	1.6%	20	
Trichloroethene	56.5	5	50	100.4%	75	125	0.8%	20	

Sample ID: 9807141-02B MS    Batch ID: 1844    Test Code: SW1311/6010    Units: mg/L  
 Run ID: ICP\_980814A    Analysis Date: 8/14/98 11:36:00 AM    Prep Date: 8/14/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	1.056	0.0029	1	105.4%	80	120			
Lead	0.9509	0.014	1	95.1%	80	120			

Qualifiers: ND - Not Detected at the Reporting Limit    R - RPD outside accepted recovery limits  
 J - Analyte detected below quantitation limits    B - Analyte detected in the associated Method Blank  
 S - Spike Recovery outside accepted recovery limits

CLIENT: Parsons Engineering Science, Inc.  
Work Order: 9807141  
Project: CSSA

**QC SUMMARY REPORT**  
Sample Matrix Spike Duplicate

Sample ID: 9807141-02B MSD Batch ID: 1844 Test Code: SW1311/6010 Units: mg/L  
Run ID: ICP\_980814A Analysis Date: 8/14/98 11:39:00 AM Prep Date: 8/14/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	1.014	0.0029	1	101.2%	80	120	4.0%	15	
Lead	0.9074	0.014	1	90.7%	80	120	4.7%	15	

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits  
B - Analyte detected in the associated Method Blank

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Laboratory Control Spike - generic

Sample ID: LCS-1752      Batch ID: 1752      Test Code: SW8260B      Units: µg/L  
 Run ID: GCMS2\_980731A      Analysis Date: 7/31/98 9:30:00 AM      Prep Date: 7/31/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	50.33	5	50	100.7%	75	125			
1,2-Dichloroethane	52.56	5	50	105.1%	75	125			
1,4-Dichlorobenzene	50.99	5	50	102.0%	75	125			
2-Butanone (MEK)	188.1	50	200	94.1%	50	150			
Benzene	50.38	5	50	100.8%	75	125			
Carbon tetrachloride	52.87	5	50	105.7%	75	125			
Chlorobenzene	50.09	5	50	100.2%	75	125			
Chloroform	50.52	5	50	101.0%	75	125			
Hexachlorobutadiene	52.03	5	50	104.1%	75	125			
Tetrachloroethene	50.39	5	50	100.8%	75	125			
Trichloroethene	47.14	5	50	94.3%	75	125			
Vinyl chloride	53.92	5	50	107.8%	75	125			

Sample ID: LCS-1789      Batch ID: 1789      Test Code: SW8260B      Units: µg/L  
 Run ID: GCMS2\_980806A      Analysis Date: 8/6/98 9:36:00 AM      Prep Date: 8/6/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	49.17	5	50	98.3%	75	125			
1,2-Dichloroethane	51.79	5	50	103.6%	75	125			
1,4-Dichlorobenzene	51.22	5	50	102.4%	75	125			
2-Butanone (MEK)	214.8	50	200	107.3%	50	150			
Benzene	50.02	5	50	100.0%	75	125			
Carbon tetrachloride	51.74	5	50	103.5%	75	125			
Chlorobenzene	51.12	5	50	102.2%	75	125			
Chloroform	49.78	5	50	99.6%	75	125			
Hexachlorobutadiene	54.18	5	50	108.4%	75	125			
Tetrachloroethene	50.92	5	50	101.8%	75	125			
Trichloroethene	47.55	5	50	95.1%	75	125			
Vinyl chloride	48.39	5	50	96.8%	75	125			

Sample ID: LCS-1844      Batch ID: 1844      Test Code: SW1311/6010      Units: mg/L  
 Run ID: ICP\_980814A      Analysis Date: 8/14/98 11:15:00 AM      Prep Date: 8/14/98

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	1.084	0.0029	1	108.4%	80	120			
Lead	1.102	0.014	1	110.3%	80	120			

Qualifiers: ND - Not Detected at the Reporting Limit      R - RPD outside accepted recovery limits  
 J - Analyte detected below quantitation limits      B - Analyte detected in the associated Method Blank  
 S - Spike Recovery outside accepted recovery limits

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Initial Calibration Verification Standard

Sample ID: ICV-98071	Batch ID: 1752	Test Code: SW8260B	Units: µg/L						
Run ID: GCMS2_980731A	Analysis Date: 7/31/98 9:04:00 AM	Prep Date:							
Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	61.3	5	60	102.2%	75	125			
1,2-Dichloroethane	62.58	5	60	104.3%	75	125			
1,4-Dichlorobenzene	61.79	5	60	103.0%	75	125			
2-Butanone (MEK)	180.4	5	200	90.2%	60	140			
Benzene	60.28	5	60	100.5%	75	125			
Carbon tetrachloride	64.59	5	60	107.7%	75	125			
Chlorobenzene	61.34	5	60	102.2%	75	125			
Chloroform	60.5	5	60	100.8%	75	125			
Hexachlorobutadiene	64.34	5	60	107.2%	75	125			
Tetrachloroethene	62.24	5	60	103.7%	75	125			
Trichloroethene	57.29	5	60	95.5%	75	125			
Vinyl chloride	64.85	5	60	108.1%	75	125			
1,2-Dichloroethane-d4	48.69	0	50	97.4%	62	139			
4-Bromofluorobenzene	49.87	0	50	99.3%	75	125			
Dibromofluoromethane	51.74	0	50	103.5%	75	125			
Toluene-d8	49.16	0	50	98.3%	75	125			

Sample ID: ICV-980806	Batch ID: 1789	Test Code: SW8260B	Units: µg/L						
Run ID: GCMS2_980806A	Analysis Date: 8/6/98 9:08:00 AM	Prep Date:							
Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	57.67	5	60	96.1%	75	125			
1,2-Dichloroethane	58.15	5	60	96.9%	75	125			
1,4-Dichlorobenzene	59.11	5	60	98.5%	75	125			
2-Butanone (MEK)	173.8	50	200	86.9%	60	140			
Benzene	57.22	5	60	95.4%	75	125			
Carbon tetrachloride	60.86	5	60	101.4%	75	125			
Chlorobenzene	59.88	5	60	99.4%	75	125			
Chloroform	58.21	5	60	97.0%	75	125			
Hexachlorobutadiene	60.59	5	60	101.0%	75	125			
Tetrachloroethene	59.76	5	60	99.6%	75	125			
Trichloroethene	54.27	5	60	90.5%	75	125			
Vinyl chloride	58.58	5	60	97.6%	75	125			
1,2-Dichloroethane-d4	46.58	0	50	93.1%	62	139			
4-Bromofluorobenzene	49	0	50	98.0%	75	125			
Dibromofluoromethane	50.47	0	50	100.9%	75	125			
Toluene-d8	48.85	0	50	97.7%	75	125			

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Continuing Calibration Verification Standard

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	59.38	5	60	99.0%	75	125			
1,2-Dichloroethane	61.09	5	60	101.8%	75	125			
1,4-Dichlorobenzene	57.77	5	60	96.3%	75	125			
2-Butanone (MEK)	180.4	5	200	90.2%	60	140			
Benzene	59.58	5	60	99.3%	75	125			
Carbon tetrachloride	62.54	5	60	104.2%	75	125			
Chlorobenzene	57.75	5	60	96.3%	75	125			
Chloroform	59.55	5	60	99.2%	75	125			
Hexachlorobutadiene	62.62	5	60	104.4%	75	125			
Tetrachloroethene	58.85	5	60	97.8%	75	125			
Trichloroethene	55.44	5	60	92.4%	75	125			
Vinyl chloride	71.36	5	60	118.9%	75	125			
1,2-Dichloroethane-d4	48.55	0	50	97.1%	62	139			
4-Bromofluorobenzene	51.28	0	50	102.6%	75	125			
Bromofluoromethane	52.2	0	50	104.4%	75	125			
Bromobenzene-d8	48.92	0	50	97.8%	75	125			

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	1.03	0.016	1	103.0%	90	110			
Barium	1.042	0.0012	1	104.2%	90	110			
Cadmium	1.025	0.0029	1	102.5%	90	110			
Chromium	0.9973	0.012	1	99.7%	90	110			
Lead	1.041	0.014	1	104.1%	90	110			
Selenium	1.039	0.013	1	103.9%	90	110			
Silver	1.023	0.0072	1	102.3%	90	110			

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.9896	0.73	1	99.0%	90	110			
Barium	1.01	0.07	1	101.0%	90	110			
Cadmium	0.9909	0.06	1	99.1%	90	110			
Chromium	0.9846	2.3	1	98.5%	90	110			
Lead	1.001	1.8	1	100.1%	90	110			
Selenium	0.9924	2	1	99.2%	90	110			
Silver	1.005	0.7	1	100.5%	90	110			

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Continuing Calibration Verification Standard

Sample ID: CCV3-980814      Batch ID: 1844      Test Code: SW6010B      Units: mg/Kg  
 Run ID: ICP\_980814A      Analysis Date: 8/14/98 1:07:00 PM      Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.9953	0.73	1	99.5%	90	110			
Barium	1.008	0.07	1	100.8%	90	110			
Cadmium	0.9955	0.06	1	99.6%	90	110			
Chromium	0.9617	2.3	1	96.2%	90	110			
Lead	1.014	1.8	1	101.4%	90	110			
Selenium	1.008	2	1	100.8%	90	110			
Silver	1.002	0.7	1	100.2%	90	110			

Sample ID: CCV4-980814      Batch ID: 1844      Test Code: SW6010B      Units: mg/Kg  
 Run ID: ICP\_980814A      Analysis Date: 8/14/98 2:14:00 PM      Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	1.002	0.73	1	100.2%	90	110			
Barium	1.005	0.07	1	100.5%	90	110			
Cadmium	0.9879	0.06	1	98.8%	90	110			
Chromium	0.9495	2.3	1	94.9%	90	110			
Lead	1.008	1.8	1	100.8%	90	110			
Selenium	0.9953	2	1	99.5%	90	110			
Silver	0.9947	0.7	1	99.5%	90	110			

Qualifiers:      ND - Not Detected at the Reporting Limit      R - RPD outside accepted recovery limits  
                     J - Analyte detected below quantitation limits      B - Analyte detected in the associated Method Blank  
                     S - Spike Recovery outside accepted recovery limits

CLIENT: Parsons Engineering Science, Inc.  
 Work Order: 9807141  
 Project: CSSA

**QC SUMMARY REPORT**  
 Continuing Calibration Blank

Sample ID: CCB1-980814    Batch ID: 1844    Test Code: SW6010B    Units: mg/Kg  
 Run ID: ICP\_980814A    Analysis Date: 8/14/98 10:46:00 AM    Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.016	0	0.0%	0	0			
Barium	ND	0.0012	0	0.0%	0	0			
Cadmium	ND	0.0029	0	0.0%	0	0			
Chromium	ND	0.012	0	0.0%	0	0			
Lead	ND	0.014	0	0.0%	0	0			
Selenium	ND	0.013	0	0.0%	0	0			
Silver	ND	0.0072	0	0.0%	0	0			

Sample ID: CCB2-980814    Batch ID: 1844    Test Code: SW6010B    Units: mg/Kg  
 Run ID: ICP\_980814A    Analysis Date: 8/14/98 11:53:00 AM    Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.73	0	0.0%	0	0			
Barium	ND	0.07	0	0.0%	0	0			
Cadmium	ND	0.06	0	0.0%	0	0			
Chromium	ND	2.3	0	0.0%	0	0			
Lead	ND	1.8	0	0.0%	0	0			
Selenium	ND	2	0	0.0%	0	0			
Silver	ND	0.7	0	0.0%	0	0			

Sample ID: CCB3-980814    Batch ID: 1844    Test Code: SW6010B    Units: mg/Kg  
 Run ID: ICP\_980814A    Analysis Date: 8/14/98 1:12:00 PM    Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.73	0	0.0%	0	0			
Barium	ND	0.07	0	0.0%	0	0			
Cadmium	ND	0.06	0	0.0%	0	0			
Chromium	ND	2.3	0	0.0%	0	0			
Lead	ND	1.8	0	0.0%	0	0			
Selenium	ND	2	0	0.0%	0	0			
Silver	ND	0.7	0	0.0%	0	0			

**Qualifiers:**    ND - Not Detected at the Reporting Limit    R - RPD outside accepted recovery limits  
                   J - Analyte detected below quantitation limits    B - Analyte detected in the associated Method Blank  
                   S - Spike Recovery outside accepted recovery limits

CLIENT: Parsons Engineering Science, Inc.  
Work Order: 9807141  
Project: CSSA

**QC SUMMARY REPORT**  
Continuing Calibration Blank

Sample ID: CCB4-980814      Batch ID: 1844      Test Code: SW6010B      Units: mg/Kg  
Run ID: ICP\_980814A      Analysis Date: 8/14/98 2:20:00 PM      Prep Date:

Analyte	Result	PQL	SPK value	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.73	0	0.0%	0	0			
Barium	ND	0.07	0	0.0%	0	0			
Cadmium	ND	0.06	0	0.0%	0	0			
Chromium	ND	2.3	0	0.0%	0	0			
Lead	ND	1.8	0	0.0%	0	0			
Selenium	ND	2	0	0.0%	0	0			
Silver	ND	0.7	0	0.0%	0	0			

**Qualifiers:**      ND - Not Detected at the Reporting Limit      R - RPD outside accepted recovery limits  
                            J - Analyte detected below quantitation limits      B - Analyte detected in the associated Method Blank  
                            S - Spike Recovery outside accepted recovery limits