

RL17 DATA VERIFICATION SUMMARY REPORT
for samples collected from
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

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INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under RL17 on March 4, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for volatile organic compounds (VOCs) and metals including barium, chromium, copper, nickel, zinc, arsenic, cadmium, and lead:

40883

The field quality control samples associated with this SDG were one trip blank (TB), one equipment blanks (EB), two field duplicates (FD) and one matrix spike/matrix spike duplicate (MS/MSD) pair.

All samples were collected by Parsons and were analyzed by APPL., Inc. following the procedures outlined in the project Statement of Work and AFCEE QAPP, version 3.0. Ambient blank was not collected due to the lack or identified possible source during the beginning of the project. All samples were collected for VOC, SVOCs and metals according to the Work Plan. Due to the lack of equipment blank sample associated with SVOCs samples, all SVOC analyses were cancelled and samples were recollected on March 26, 2003. Results of SVOCs were submitted under RL-17 #3 data package (APPL's SDG # 41074).

The cooler associated with this SDG was received by the laboratory at a temperature of 3° C which is within the 2-6° C range recommended by the QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the AFCEE QAPP, version 3.0. Information reviewed in the data packages includes sample results; laboratory quality control results; method blank results, MS/MSD results, instrument calibration data, case narrative; raw data; cooler checklist; and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether the guidelines in the AFCEE QAPP, Version 3.0, were met.

VOLATILES

General

The volatiles portion of this SDG consisted of eight (8) samples, including three (3) environmental soil samples, one field duplicate, one MS/MSD pair, one equipment blank and one trip blank. The samples were collected on March 4, 2003 and were analyzed for the full list of VOCs as specified in the AFCEE QAPP, Version 3.0.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the MS/MSD and LCS samples and the surrogate spikes. Sample B34-SS13 was designated for MS/MSD analysis on the COC.

All MS/MSD recoveries were within acceptance criteria except for the following:

Analyte	MS %R	MSD %R	Criteria
1,2,3-Trichlorobenzene	46.4	41.6	65-147%
1,2,4-Trichlorobenzene	55.7	51.3	65-145%
Dichlorodifluoromethane	137	(124)	65-135%
Hexachlorobutadiene	44.8	39.1	35-135%
Naphthalene	51.9	51.9	65-135%

() indicates the recovery met criteria.

All associated sample results were flagged "M" in accordance with the AFCEE QAPP.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) obtained from the MS/MSD concentrations and the field duplicate analyte values. Sample B34-SS02 was collected in duplicate.

All MS/MSD RPDs were within acceptance criteria.

All field duplicate RPDs were within acceptance criteria except for the following:

Analyte	B34-SS02 Result (mg/Kg)	B34-SS02 DUP Result (mg/Kg)	RPD	Criteria
Methylene chloride	0.0939	0.0238	119	RPD = 30

All methylene chloride results in this SDG that were above the RL were flagged "J" in accordance with the AFCEE QAPP.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection or analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding times required for the analysis.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- All continuing calibration criteria were met.
- All second source verification criteria were met. The LCS was prepared with a second source standard.
- All internal standard criteria were met.

There were two method blanks, one equipment blank and one trip blank associated with the VOC analyses in this SDG. All blanks were free of VOCs above the RL, except for the following:

Blank ID	Analyte	Conc. (µg/L)	RL (µg/L)
TB-01	Methylene chloride	2.95	1.0
	Toluene	2.03	1.1
EB-1	Methylene chloride	1.78	1.0
030317A-BLK WS	Methylene chloride	1.4	1.0

All associated sample results for toluene were flagged “B” due to the levels detected in the blanks. All associated sample results for methylene chloride were previously flagged “J” due to the failing field duplicate RPD. No additional corrective action was necessary for methylene chloride since the “J” flag supercedes the “B” flag in the AFCEE QAPP flag hierarchy.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All VOC results for the samples in this SDG were considered usable. The completeness for the volatiles portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

CADMIUM

General

The cadmium portion of this SDG consisted of nineteen (19) samples including fourteen (14) soil samples, two (2) field duplicates, one MS/MSD pair and one equipment blank. The samples were collected on March 4, 2003 and were analyzed for cadmium.

The cadmium analyses were performed using USEPA SW846 Method 7131A. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. One LCS/LCSD pair was analyzed for waters and one LCS/LCSD pair was analyzed for soils. Sample B34-SS13 was designated for MS/MSD analysis on the COC.

All LCS/LCSD recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria except for the following:

Analyte	MS %R	MSD %R	Criteria
Cadmium	126.7	(106.7)	80-122%

() indicates the recovery met criteria.

All associated cadmium results were flagged “M” in accordance with the AFCEE QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Sample B34-SS02 and B34-SS06 were collected in duplicate.

All LCS/LCSD and MS/MSD RPDs were within acceptance criteria.

The RPD for cadmium was within criteria for sample B34-SS06 and its field duplicate. The RPD for sample B34-SS02 and its field duplicate failed to meet criteria as follows:

Analyte	B 34-SS02 Result (mg/Kg)	B 34-SS02 DUP Result (mg/Kg)	RPD	Criteria
Cadmium	0.46	0.66	35.7	RPD = 15

All associated sample results were previously flagged “M” due to the failing MS recovery. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blank for cross contamination of samples during collection and analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared with a second source standard.
- A dilution test was run on the five fold diluted digestate of sample B34-SS13 and met criteria. A recovery test was not required.

There were two method blanks, one equipment blank and several calibration blanks associated with the cadmium analyses in this SDG. All blanks were free of cadmium at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All cadmium results for the samples in this SDG were considered usable. The completeness for the cadmium portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

LEAD

General

This SDG consisted of nineteen (19) samples including fourteen (14) environmental soil samples, two (2) field duplicates, one MS/MSD pair and one equipment blank. The samples were collected on March 4, 2003 and were analyzed for lead.

The lead analyses were performed using USEPA SW846 Method 7421. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B34-SS13 was designated for MS/MSD analysis on the COC.

All LCS/LCSD recoveries were within acceptance criteria.

The MS/MSD recoveries failed criteria due to the high parent sample concentration relative to the spike amount. The concentration of lead in the parent sample was over two hundred times greater than the spike amount. All associated lead results were flagged "M" in accordance with the AFCEE QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD concentrations and the parent/field duplicate concentrations. Sample B34-SS02 and B34-SS06 were collected in duplicate. The RPD calculation was not applicable for the MS/MSD due to the anomalous recoveries.

All LCS/LCSD and field duplicate RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection and analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared with a second source standard.
- A dilution test was run on the two hundred fold diluted digestate of sample B34-SS13 and the percent difference met criteria. A recovery test was not required.

There were two method blanks, one equipment blank and several calibration blanks associated with the lead analyses in this SDG. All blanks were free of lead at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All lead results for the samples in this SDG were considered usable. The completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ICP METALS

General

The ICP metals portion of this SDG consisted of nineteen (19) samples, including fourteen (14) environmental soil samples, two (2) field duplicates, one MS/MSD pair and one equipment blank. The samples were collected on March 4, 2003 and were analyzed for a reduced list of ICP metals, which included barium, chromium, copper, nickel, and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B34-SS13 was designated for MS/MSD analysis on the COC.

There was LCS/LCSD pair analyzed for waters and one LCS/LCSD pair analyzed for soils. All LCS/LCSD recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria except for the following:

Analyte	MS %R	MSD %R	Criteria
Copper	(93.9)	72.7	75-125
Zinc	74.1	64.6	75-125

() indicates the recovery met criteria.

All associated sample results for these metals were flagged "M" in accordance with the AFCEE QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Samples B34-SS02 and B34-SS06 were collected in duplicate.

All LCS/LCSD and MS/MSD RPDs were within acceptance criteria.

All field duplicate RPDs were within acceptance criteria except for the following:

Analyte	B34-SS02 Result (mg/Kg)	B34-SS02 DUP Result (mg/Kg)	RPD	Criteria
Copper	20.19	28.54	34.3	RPD = 20
Zinc	35.41	45.26	24.4	

All associated sample results were previously flagged “M” due to the failing MS recovery. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection and analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source verification criteria were met. Initial calibration verification samples were prepared with a second source standard.
- All interference check criteria were met.
- A dilution test was analyzed on sample EB-1. The dilution test was not applicable because no metals were detected above the RL in the equipment blank. A recovery test was performed with the same sample and all recoveries were within acceptance criteria.
- A dilution test was analyzed on sample B34-SS13. The dilution test was not applicable for chromium because the chromium concentration was below the RL in the original sample. The dilution test met criteria for barium and zinc, but failed for copper and nickel. All associated copper results were previously flagged “M” due to the failing MS recovery. No additional corrective action was necessary for copper since

the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy. All associated sample results for nickel were flagged “J” due to the failing dilution test.

- A post digestion spike was analyzed on sample B34-SS13. All post digestion spike criteria were met for chromium, copper, and nickel.

There were two method blanks, one equipment blank and several calibration blanks associated with the ICP metals analyses in this SDG. All blanks were free of metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP metal results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

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INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under RL17 on March 26, 2003. The samples in this SDG were recollected due to a non-compliant equipment blank associated with the SVOC samples collected on March 5 and 6, 2003. The recollected samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for semivolatile organic compounds (SVOCs):

41074

The field quality control (QC) samples collected in association with this SDG were one field duplicate, one matrix spike/matrix spike duplicate (MS/MSD) pair, and one equipment blank.

All samples were collected by Parsons and were analyzed by APPL., Inc. following the procedures outlined in the project Statement of Work and AFCEE QAPP, version 3.0.

The cooler associated with the samples in this SDG was received by the laboratory at a temperature of 4.0° C which is within the 2-6° C range recommended by the QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the AFCEE QAPP, version 3.0. Information reviewed in the data packages includes sample results; laboratory quality control results; method and field blanks; instrument calibration; case narrative; raw data; and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether the guidelines in the AFCEE QAPP, Version 3.0, were met.

SEMIVOLATILES

General

This SDG consisted of eight (8) samples, including four (4) environmental soil samples, one field duplicate, one MS/MSD pair and one equipment blank. The samples were collected on March 26, 2003, and were analyzed for the full list of SVOCs specified in the AFCEE QAPP, Version 3.0.

The SVOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8270C. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS/LCSD samples, MS/MSD samples, and the surrogate spikes. Sample B34-SS13 was designated for MS/MSD analysis on the COC.

For soils, the lab analyzed a single LCS. All soil LCS recoveries were within criteria.

For waters, the lab analyzed a LCS/LCSD pair. The water LCS/LCSD was only associated with the equipment blank as all other samples in this SDG were soils. Many analytes were recovered below criteria in the water LCS and two analytes failed criteria in the LCSD. The failing analytes are too numerous to list here, but a detailed list of the failures can be found in the case narrative or on pages 61 through 65 of the analytical report. All analytes were non-detect in the equipment blank, so the EB results for the failing compounds were flagged "R" in accordance with the AFCEE QAPP.

Several analytes failed to meet criteria in the MS/MSD. The failing analytes are too numerous to list here, but a detailed list of the failures can be found in the case narrative or on pages 66 and 67 of the analytical report. All associated sample results for the failing analytes were flagged "M" in accordance with the AFCEE QAPP.

All surrogate spike recoveries were within criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) obtained from the soil MS/MSD, water LCS/LCSD and parent/FD concentrations. Sample B34-SS02 was collected in duplicate.

Several RPDs for the water LCS/LCSD failed to meet criteria. The failing analytes are too numerous to list here, but a detailed list of the failures can be found in the case narrative or on pages 61 through 65 of the analytical report. All analytes were non-detect in the equipment blank, so the EB results for the failing compounds were flagged "R".

Several RPDs for the MS/MSD failed to meet criteria. The failing analytes are too numerous to list here, but a detailed list of the failures can be found in the case narrative or on

pages 66 and 67 of the analytical report. All associated sample results for the failing analytes were flagged “M” in accordance with the AFCEE QAPP.

All analytes were non-detect in both the parent sample and its field duplicate.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection or analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria and frequency were met.
- All initial calibration criteria were met analysis.
- All second source verification criteria were met.
- All continuing calibration criteria were met.
- All internal standard criteria were met.

There was one method blank and one equipment blank associated with the SVOC analyses in this SDG. All blanks were free of any target SVOCs at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All semivolatile results for the samples in this SDG were considered usable except for 28 analytical results flagged “R” in the equipment blank due to the non-compliant water LCS/LCSD. The total number of analytical results reported was 384 (six field samples with 64 analytes each). So the calculated completeness for the SVOC portion of this SDG is 92.7%, which meets the minimum acceptance criteria of 90%.