

RL83 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 environmental soil samples and associated field quality control (QC) samples collected from the Camp Stanley Site (under RL83) on March 3, 2000. Samples in the following laboratory Sample Delivery Group (SDG) were analyzed for semivolatile organic compounds (SVOCs); volatile organic compounds (VOCs); and metals including barium, chromium, copper, nickel, zinc, arsenic, cadmium, lead and mercury:

32133

Field quality control samples collected were trip blank; equipment blank; matrix spike/matrix spike duplicates (MS/MSD); and field duplicates. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at the site. The trip blank was analyzed for volatile organics only. All other field quality control samples were analyzed for the same parameters as their associated samples.

All samples were collected by Parsons Engineering Science (Parsons ES). All analyses were performed by APPL, Inc. following procedures outlined in the AFCEE QAPP, version 3.0.

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 include sample results; the summary of laboratory quality control results; case narrative; raw data; and chain-of-custody forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the AFCEE QAPP were met.

SVOC SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank. The samples were collected on March 3, 2000 and analyzed for semivolatile organic compounds (SVOCs).

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

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples; LCS samples; and surrogate spikes. Sample B23-SB03 (0.5-1.0) was used as the MS/MSD sample for this SDG.

All MS/MSD %Rs were within acceptance criteria except for as follows:

Sample B23-SB03 (0.5-1.0')

Analyte	MS %R	MSD %R	QC
2,4-dinitrophenol	18.8	-	25-161
benzoic acid	8.8	12.4	25-172

- The MSD %R was compliant.

The 2,4-dinitrophenol and benzoic acid results in samples from site B23 with similar matrix with the MS/MSD sample were flagged "M" to indicate a matrix effect was present.

All LCS and surrogate %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

All MS/MSD RPDs were within acceptance criteria except for as follows:

Sample B23-SB03 (0.5-1.0')

Analyte	RPD	QC
2,4-dinitrophenol	43.9	30
benzoic acid	33.3	30

The 2,4-dinitrophenol and benzoic acid results in samples from site B23 with similar matrix with the MS/MSD sample were flagged "M" to indicate a matrix effect was present.

The field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 100.0% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection or analysis.

All samples in this SDG were analyzed following chain-of-custody form (COC) and analytical procedures described in the AFCEE. All samples were prepared and analyzed within the holding times required for the analysis.

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

There were two method blanks and one equipment blank associated with the SVOC analyses in this SDG. The blanks were free of SVOCs above the RL.

VOC SDG 32133

General

This SDG consisted of eight (8) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples, one equipment blank sample and one trip blank sample. The samples were collected on March 3, 2000 and analyzed for volatile organic compounds (VOCs).

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

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples; LCS samples; and surrogate spikes. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample in this SDG.

All MS/MSD %Rs were within acceptance criteria except for as follows:

Sample B23-SB03 (0.5-1.0')

Analyte	MS %R	MSD %R	QC
1,2,3-trichlorobenzene	-	64.3	65-147
dichlorodifluoromethane	64.3	-	65-135

- The %Rs were compliant.

The results for 1,2,3-trichlorobenzene and dichlorodifluoromethane results in samples from site B23 with similar matrix as the MS/MSD sample were flagged "M" to indicate a matrix effect was present.

All LCS %Rs were within acceptance criteria.

The surrogate %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample in this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

All MS/MSD RPDs were within acceptance criteria except for as follows:

Sample B23-SB03 (0.5-1.0')

Analyte	RPD	QC
1,2,3-trichlorobenzene	40.0	30
1,2,4-trichlorobenzene	37.4	30
dichlorodifluoromethane	36.7	30
naphthalene	31.4	30
vinyl chloride	33.0	30

The results for the non-compliant analytes in samples from site B23 with similar matrix as the MS/MSD sample were flagged “M” to indicate a matrix effect was present.

All field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 100.0% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection or analysis.

All samples in this SDG were analyzed following chain-of-custody forms (COCs) and 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 was met.
- All initial calibration criteria were met.

- All continuing calibration criteria were met.
- All second source verification criteria were met.
- All internal standard criteria were met.

There were three method blanks, one equipment blank and one trip blank associated with the VOC analyses in this SDG. The blanks were free of VOCs above the RL.

METALS SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank sample. The samples were collected on March 3, 2000 and analyzed for metals; barium, chromium, copper, nickel, and zinc.

The barium, chromium, copper, nickel, and zinc analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 6010B. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples and LCS samples. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG.

The MS/MSD %Rs did not meet the acceptance criteria:

Sample B23-SB03 (0.5-1.0')

Analyte	MS %R	MSD %R	QC
Barium	30.5	35.6	75-125
Chromium	38.8	34.9	75-125
Copper	48.4	46.5	75-125
Nickel	38.1	37.0	75-125
Zinc	36.5	51.7	75-125

The barium, chromium, copper, nickel and zinc results in samples from site B23 with similar matrix as the MS/MSD sample were flagged "M" to indicate a matrix effect was present.

The LCS %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

All MS/MSD and field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 97.1% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection and analysis.

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

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- All interference check criteria were met.
- All dilution test criteria were met except for as follows:

Sample RL83-EB02

Analyte	%D	QC
zinc	38.1	10

Sample B23-SB03 (0.5-1.0')

Analyte	%D	QC
Barium	12.3	10
Nickel	18.3	10
Zinc	12.5	10

The barium, nickel and zinc results in the associated samples were considered estimated and flagged “J”. The diluted chromium result was less than the reporting limit. The copper result was less than 50 times the MDL. Therefore, the dilution test was not required for the chromium and copper.

- All post digestion spike addition criteria were met except for as follows:

Sample RL83-EB02

Analyte	%R	QC
Zinc	-10.1	75-125

Zinc result in the RL83-EB02 sample was flagged with “R”.

Sample B23-SB03 (0.5-1.0')

Analyte	%R	QC
Barium	72.7	75-125
Chromium	71.5	75-125
Nickel	70.7	75-125

The barium, chromium, nickel and zinc results in the associated samples were considered estimated and flagged “J”.

There were two method blanks, one equipment blank and several calibration blanks associated with the metal analyses in this SDG. All method and calibration blanks were free of any metals above the RL. The equipment blank, RL83-EB02 contained 1.978 mg/l of zinc. No further action was needed since all the associated zinc results were already flagged with “M” or “J”.

MERCURY SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank sample. The samples were collected on March 3, 2000 and analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples and LCS samples. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG.

The MS/MSD and LCS %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

Both MS/MSD and field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection or analysis.

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

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.

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

ARSENIC SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank sample. The samples were collected on March 3, 2000 and analyzed for arsenic.

The arsenic analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 7060A. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples and LCS samples. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG.

The MS/MSD %Rs were within acceptance criteria except for as follows:

Sample B23-SB03 (0.5-1.0')

Analyte	MS %R	MSD %R	QC
arsenic	-	51.0	74-120

- The %R was compliant.

The arsenic result in the samples from site B23 with similar matrix as the MS/MSD sample was flagged "M" to indicate a matrix effect was present.

The LCS %R was within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

The MS/MSD RPD did not meet acceptance criteria:

Sample B23-SB03 (0.5-1.0')

Analyte	%RPD	QC
arsenic	36.8	15

The arsenic result in samples from site B23 with similar matrix as the MS/MSD sample were flagged “M” to indicate a matrix effect was present.

The field duplicate RPD was outside acceptance limits for arsenic (74.7% RPD). No further action was needed since the associated arsenic result was already flagged “M” due to MS/MSD outliers.

Completeness

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

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection and analysis.

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

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- The diluted result for the sample used for the dilution test was less than the reporting limit. Therefore, the dilution test was not required.
- The recovery test criteria was met.

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

CADMIUM SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank. The samples were collected on March 3, 2000 and analyzed for cadmium.

The cadmium analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 7131A. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples and LCS samples. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG.

The MS/MSD and LCS %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

Both MS/MSD and field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection and analysis.

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

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- The result for the sample chosen for the dilution test was less than 25 times the MDL. The dilution test was not required.
- All recovery test criteria were met.

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 any cadmium above the RL.

LEAD SDG 32133

General

This SDG consisted of seven (7) samples, including three (3) confirmation environmental soil samples, one field duplicate soil sample, one set of matrix spike/matrix spike duplicate samples and one equipment blank sample. The samples were collected on March 3, 2000 and analyzed for lead.

The lead analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 7421. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples and LCS samples. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG.

The MSD and LCS %Rs were within acceptance criteria. The %R of the MS sample was non-compliant, 59.4%. All samples collected from the same site with similar matrix were flagged with "M".

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B23-SB03 (0.5-1.0') was used as the MS/MSD sample for this SDG. Sample B23-SB03 (0.5-1.0') FD was the field duplicate of sample B23-SB03 (0.5-1.0').

Both MS/MSD and field duplicate RPDs were within acceptance criteria.

Completeness

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

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

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

- Comparing the chain-of-custody 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 sample collection and analysis.

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

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- All dilution test criteria were met.
- All recovery test criteria were met.

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 any lead above the RL.