

ITS REWORK DATA VERIFICATION SUMMARY REPORT

for soil 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 field quality control (QC) samples collected from the Camp Stanley Storage Activity (CSSA) under ITS rework on March 16 and 17, 2000. Samples in the following laboratory Sample Delivery Groups (SDGs) were analyzed for metals:

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Field quality control samples collected were equipment blanks, matrix spike/matrix spike duplicates (MS/MSD), and field duplicates. No ambient blanks were collected for this project. 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. All field quality control samples were analyzed for the same parameters as their associated samples.

All samples were collected by Parsons Engineering Science (Parsons ES) and analyzed by O'Brien & Gere Laboratories, Inc. (OBG) following the 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 narratives; raw data; and chain-of-custody forms. The analyses and findings presented in this report are based on the reviewed information and whether the guidelines in the AFCEE QAPP were met.

ICP METALS

General

These SDGs consisted of thirty-six (36) samples; including thirty (30) environmental soil samples, three field duplicates, one set of matrix spike/matrix spike duplicate (MS/MSD) samples and one equipment blank. The samples were collected on March 16 and 17, 2000 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 United States Environmental Protection Agency (USEPA) SW846 Method 6010B. Except as indicated in this report, all samples were analyzed following the procedures outlined in the AFCEE QAPP.

It should be noted that many of the soil samples in these SDGs were analyzed at a 5X dilution due to the high concentration of calcium present.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the MS/MSD samples and laboratory control spike (LCS) samples. Sample RW-B34-SB03 (7.5-8.0) was analyzed as the MS/MSD for these SDGs.

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

Sample ID	Analyte	MS %R	MSD %R	QC Criteria
RW-B34-SB03 (7.5-8.0)	Barium	69	(84)	75-125%

() indicates that the recovery met QC criteria.

The barium results in the samples from site B34 collected at a similar depth as the MS/MSD samples were flagged "M" to indicate a matrix effect (low bias) was present.

All LCS %Rs 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. The following samples were collected and analyzed as field duplicates:

Parent Sample ID	Field Duplicate ID
RW-B32-SB03 (12.0-12.5)	RW-B32-SB03 (12.0-12.5) FD
RW-B34-SB03 (7.5-8.0)	RW-B34-SB03 (7.5-8.0) FD
RW-B6-SS03 (0.0-0.5)	RW-B6-SS03 (0.0-0.5) FD

All MS/MSD RPDs were within acceptance criteria.

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

Parent Sample / Duplicate	Collected	Analyte	RPD	QC Criteria
RW-B32-SB03 (12.0-12.5) / FD	3/16/00	Barium	94.0%	≤20%

The barium results for all samples collected on the same sampling date as the non-compliant field duplicate pair were considered estimated and flagged “J” if detected above the RL. The “J” flag was not applied if the result was below the RL (flagged “F”) or if the result was previously flagged “M” due to the failing MS/MSD since both the “F” flag and the “M” flag supercede 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 chain-of-custody (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 sample collection or analysis.

All samples in these SDGs 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.
- All dilution test criteria were met.
- All post digestion spike addition criteria were met.

There were six method blanks, one equipment blank and several calibration blanks associated with the ICP metal analyses in these SDGs. All blanks were free of any metals of concern 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 metals results for the samples in these SDGs were considered usable. The completeness for the ICP metals portion of these SDGs is 100%, which meets the minimum acceptance criteria of 90%.

ARSENIC

General

These SDGs consisted of thirty-six (36) samples; including thirty (30) environmental soil samples, three field duplicates, one set of MS/MSD samples and one equipment blank. The samples were collected on March 16 and 17, 2000 and were analyzed for arsenic.

The arsenic analyses were performed using USEPA SW846 Method 7060A. Except as indicated in this report, all samples were analyzed following the procedures outlined in the AFCEE QAPP.

It should be noted that several samples in these SDGs were analyzed at a dilution based on the ICP screening results. This is an approved variance for the OBG laboratory.

Accuracy

Accuracy was evaluated using the %R obtained from the MS/MSD and LCS samples. Sample RW-B34-SB03 (7.5-8.0) was analyzed as the MS/MSD for these SDGs.

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

Precision

Precision was evaluated using the RPD obtained from the MS/MSD concentrations and the field duplicate analyte values. The following samples were collected and analyzed as field duplicates:

Parent Sample ID	Field Duplicate ID
RW-B32-SB03 (12.0-12.5)	RW-B32-SB03 (12.0-12.5) FD
RW-B34-SB03 (7.5-8.0)	RW-B34-SB03 (7.5-8.0) FD
RW-B6-SS03 (0.0-0.5)	RW-B6-SS03 (0.0-0.5) FD

The MS/MSD RPD was within acceptance criteria.

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

Parent Sample / Duplicate	Collected	Analyte	RPD	QC Criteria
RW-B32-SB03 (12.0-12.5) / FD	3/16/00	Arsenic	86.6%	≤15%
RW-B34-SB03 (7.5-8.0) / FD	3/16/00	Arsenic	24.4%	≤15%

The arsenic results for all samples collected on the same sampling date as the non-compliant field duplicate pair were considered estimated and flagged “J” if detected above the RL. The “J” flag was not applied if the result was below the RL (flagged “F”) since the “F” 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 sample collection and analysis.

All samples in these SDGs 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.
- All dilution test criteria were met.
- All recovery test criteria were met.

There were four method blanks, one equipment blank and numerous calibration blanks associated with the arsenic analyses in these SDGs. All blanks were free of any arsenic 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 arsenic results for the samples in these SDGs were considered usable. The completeness for the arsenic portion of these SDGs is 100%, which meets the minimum acceptance criteria of 90%.

CADMIUM

General

These SDGs consisted of thirty-six (36) samples; including thirty (30) environmental soil samples, three field duplicates, one set of MS/MSD samples and one equipment blank. The samples were collected on March 16 and 17, 2000 and were analyzed for cadmium.

The cadmium analyses were performed using USEPA SW846 Method 7131A. Except as indicated in this report, all samples were analyzed following the procedures outlined in the AFCEE QAPP.

Accuracy

Accuracy was evaluated using the %R obtained from the MS/MSD and LCS samples. Sample RW-B34-SB03 (7.5-8.0) was analyzed as the MS/MSD for these SDGs.

The MS/MSD %Rs were within acceptance criteria except for the following:

Sample ID	Analyte	MS %R	MSD %R	QC Criteria
RW-B34-SB03 (7.5-8.0)	Cadmium	73	(91)	80-122%

() indicates that the recovery met QC criteria.

The cadmium result in samples from site B34 collected at a similar depth as the MS/MSD sample were flagged “M” to indicate a matrix effect (low bias) was present.

The LCS %R was within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD concentrations and the field duplicate analyte values. The following samples were collected and analyzed as field duplicates:

Parent Sample ID	Field Duplicate ID
RW-B32-SB03 (12.0-12.5)	RW-B32-SB03 (12.0-12.5) FD
RW-B34-SB03 (7.5-8.0)	RW-B34-SB03 (7.5-8.0) FD
RW-B6-SS03 (0.0-0.5)	RW-B6-SS03 (0.0-0.5) FD

The MS/MSD RPD failed to meet acceptance criteria as follows:

Sample ID	Analyte	RPD	QC Criteria
RW-B34-SB03 (7.5-8.0)	Cadmium	17	≤15%

The cadmium results in all associated samples were previously flagged “M” due to the failing MS/MSD recoveries, so no further corrective action was necessary.

All field 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 sample collection or analysis.

All samples in these SDGs 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.
- All dilution test criteria were met.
- All recovery test criteria were met.

There were three method blanks, one equipment blank and several calibration blanks associated with the cadmium analyses in these SDGs. All blanks were free of any cadmium 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 these SDGs were considered usable. The completeness for the cadmium portion of these SDGs is 100%, which meets the minimum acceptance criteria of 90%.

LEAD

General

These SDGs consisted of thirty-six (36) samples, including thirty (30) environmental soil samples, three field duplicates, one set of MS/MSD samples and one equipment blank. The samples were collected on March 16 and 17, 2000 and were analyzed for lead.

The lead analyses were performed using USEPA SW846 Method 7421. Except as indicated in this report, all samples were analyzed following the procedures outlined in the AFCEE QAPP.

It should be noted that several samples in these SDGs were analyzed at a dilution based on the ICP screening results. This is an approved variance for the OBG laboratory.

Accuracy

Accuracy was evaluated using the %R obtained from the MS/MSD and LCS samples. Sample RW-B34-SB03 (7.5-8.0) was analyzed as the MS/MSD for these SDGs.

The MS/MSD failed to meet acceptance criteria as follows:

Sample ID	Analyte	MS %R	MSD %R	QC Criteria
RW-B34-SB03 (7.5-8.0)	Lead	-150	5	74-124%

The lead results for all samples from site B34 collected at a similar depth as the MS/MSD samples were flagged “M” to indicate a matrix effect (low bias) was present.

The LCS %R was within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD concentrations and the field duplicate analyte values. The following samples were collected and analyzed as field duplicates:

Parent Sample ID	Field Duplicate ID
RW-B32-SB03 (12.0-12.5)	RW-B32-SB03 (12.0-12.5) FD
RW-B34-SB03 (7.5-8.0)	RW-B34-SB03 (7.5-8.0) FD
RW-B6-SS03 (0.0-0.5)	RW-B6-SS03 (0.0-0.5) FD

The MS/MSD RPD was within acceptance criteria.

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

Parent Sample / Duplicate	Collected	Analyte	RPD	QC Criteria
RW-B32-SB03 (12.0-12.5) / FD	3/16/00	Lead	116%	≤15%

The lead results for all samples collected on the same sampling date as the non-compliant field duplicate pair were considered estimated and flagged “J” if detected above the RL. The “J” flag was not applied if the result was below the RL (flagged “F”) or if the result was previously flagged “M” due to the failing MS/MSD since both the “F” flag and the “M” flag supercede 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 sample collection and analysis.
- All samples in these SDGs 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.

- All dilution test criteria were met.
- All recovery test criteria were met.

There were four method blanks, one equipment blank and numerous calibration blanks associated with the lead analyses in these SDGs. All blanks were free of any lead 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 these SDGs were considered usable. The completeness for the lead portion of these SDGs is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

These SDGs consisted of thirty-six (36) samples, including thirty (30) environmental soil samples, three field duplicates, one set of MS/MSD samples and one equipment blank. The samples were collected on March 16 and 17, 2000 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A for soils and 7470A for waters. Except as indicated in this report, all samples were analyzed following the procedures outlined in the AFCEE QAPP.

Accuracy

Accuracy was evaluated using the %R obtained from the MS/MSD and LCS samples. Sample RW-B34-SB03 (7.5-8.0) was analyzed as the MS/MSD for these SDGs.

The MS/MSD failed to meet acceptance criteria as follows:

Sample ID	Analyte	MS %R	MSD %R	QC Criteria
RW-B34-SB03 (7.5-8.0)	Mercury	17	23	77-120%

The mercury result in samples from site B34 collected at a similar depth as the MS/MSD sample were flagged "M" to indicate a matrix effect (low bias) was present.

All LCS %Rs were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD concentrations and the field duplicate analyte values. The following samples were collected and analyzed as field duplicates:

Parent Sample ID	Field Duplicate ID
RW-B32-SB03 (12.0-12.5)	RW-B32-SB03 (12.0-12.5) FD
RW-B34-SB03 (7.5-8.0)	RW-B34-SB03 (7.5-8.0) FD
RW-B6-SS03 (0.0-0.5)	RW-B6-SS03 (0.0-0.5) FD

The MS/MSD RPD failed to meet acceptance criteria as follows:

Sample ID	Analyte	RPD	QC Criteria
RW-B34-SB03 (7.5-8.0)	Mercury	30%	≤25%

The mercury results in all associated samples were previously flagged “M” due to the failing MS/MSD recoveries, so no further corrective action was necessary.

All 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 sample collection or analysis.

All samples in these SDGs 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.

There were three method blanks, one equipment blank and numerous calibration blanks associated with the mercury analyses in these SDGs. All blanks were free of any mercury 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 mercury results for the samples in these SDGs were considered usable. The completeness for the mercury portion of these SDGs is 100%, which meets the minimum acceptance criteria of 90%.