

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

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under RL17 on March 5 and 6, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for metals including barium, chromium, copper, nickel, zinc, mercury, arsenic, cadmium, and lead:

40910

The field quality control samples associated with this SDG were two equipment blanks (EB), two field duplicates (FD) and two sets of matrix spike/matrix spike duplicate (MS/MSD) samples.

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 this SDG was received by the laboratory at a temperature of 4⁰ C which is within the 2-6⁰ 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.

ICP METALS

General

This SDG consisted of thirty (30) samples including twenty two (22) soil samples, two (2) field duplicates, two (2) MS/MSD pairs, and two (2) equipment blanks. The samples were collected on March 5 and 6, 2003 and were analyzed for a reduced list of ICP metals, including barium, chromium, copper, and zinc. The samples collected from Bldg. 43 were also analyzed for nickel.

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 within the holding time required by the method.

There were two analytical batches for soil samples and one analytical batch for the equipment blank samples.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B8-SS05 and Bldg43-SS04 were 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:

Parent Sample	Analyte	MS %R	MSD %R	Criteria
B8-SS05	Barium	770	0	75-125%
	Copper	0	0	
	Zinc	84	0	
Bldg43-SS04	Copper	117	129	75-125%

For the parent sample B8-SS05, the anomalous recoveries are due to the low spike concentration relative to the native sample result. The parent sample concentrations for these metals were greater than 5 times the spike amount. All associated data for the failing metals were flagged "M" in accordance with the AFCEE QAPP, Version 3.0.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Sample B8-SS02 and Bldg43-SS09 were collected in duplicate.

All LCS/LCSD and parent/FD RPDs were within acceptance criteria.

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

Parent Sample	Analyte	RPD	Criteria
B8-SS05	Barium	23	RPD = 20
	Copper	55	

All associated data was previously flagged “M” due to the failing MS/MSD recoveries for these metals.

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 contamination of samples during collection and analysis.

Samples 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.
- For the water batch, a dilution test was analyzed on a CSSA EB from a different SDG. The dilution test was not applicable because all metals were below the RL. A post digestion spike was analyzed on the same sample and all metals met criteria.
- A dilution test was analyzed on sample B8-SS12. The dilution test was not applicable for chromium, nickel or zinc because these metals were below the RL in the undiluted and/or diluted run. The dilution test criteria were met for barium and copper. A post digestion spike was analyzed on the same sample. All metals met criteria in the post digestion spike.
- A dilution test was analyzed on sample Bldg43-SS04. The dilution test was not applicable for chromium and nickel because these metals were below the RL in the undiluted and/or diluted run. The dilution test criteria were met for barium, copper and zinc. A post digestion spike was analyzed on the same sample. All metals met criteria in the post digestion spike.

There were three method blanks, two equipment blanks 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 metal results for the samples in this SDG were considered to be usable. The completeness for the metal portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ARSENIC

General

This SDG consisted of fourteen (14) samples including ten (10) soil samples, one (1) FD, one MS/MSD pair and one EB. The samples were collected on March 5 and 6, 2003 and were analyzed for arsenic.

The arsenic analyses were performed using USEPA SW846 Method 7060A. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP within the holding time required by the method.

There were three analytical batches associated with the arsenic analyses, two for soils and one for waters.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample Bldg43-SS04 was designated for MS/MSD analysis on the COC.

All LCS/LCSD recoveries were within acceptance criteria.

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

Parent Sample	Analyte	MS %R	MSD %R	Criteria
Bldg43-SS04	Arsenic	41	33	74-120%

The arsenic results in all associated samples 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 Bldg 43-SS09 was collected in duplicate.

All LCS/LCSD, MS/MSD and parent/FD 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 contamination of samples during collection and analysis.

Samples 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 was prepared with a second source standard.
- A dilution test was analyzed on EB-1 (collected on March 6, 2003). The dilution test was not applicable because arsenic was not detected above the RL. A recovery test was analyzed on the same sample and the arsenic recovery met criteria.
- A dilution test was run on the ten fold diluted digestate of sample Bldg43-SS09 and the percent difference met criteria. A recovery test was analyzed on the same sample. The arsenic recovery failed criteria at 71%. All arsenic results were previously flagged “M” due to the non-compliant MS/MSD recoveries. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.
- A dilution test was analyzed on sample Bldg43-SS10 and the percent difference met criteria. A recovery test was analyzed on the same sample. The arsenic recovery failed criteria at 45%. All arsenic results were previously flagged “M” due to the non-compliant MS/MSD recoveries. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.

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

The arsenic result for the samples in this SDG was considered to be usable. The completeness for the arsenic portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

CADMIUM

General

This SDG consisted of fourteen (14) samples including ten (10) soil samples, one (1) FD, one MS/MSD pair and one EB. The samples were collected on March 5 and 6, 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 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 Bldg43-SS04 was designated for MS/MSD analysis on the COC.

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

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD, MS/MSD, and parent/FD concentrations. Sample Bldg 43-SS09 was collected in duplicate.

All LCS/LCSD, MS/MSD 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 contamination of samples during collection and analysis.

Samples 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 sample was prepared with a second source standard.
- A dilution test was run on sample EB-1 but was not applicable because cadmium was not detected above the RL. A recovery test was analyzed on the same sample and the cadmium recovery met criteria.

- A dilution test was run on the ten fold diluted digestate of sample Bldg43-SS09 (FD). The percent difference exceeded criteria at 74%. A recovery test was analyzed on the same sample, but the cadmium recovery failed criteria at 70%. All cadmium results for the samples in this SDG were flagged “J” if the concentration was above the RL.
- A dilution test was run on the ten fold diluted digestate of sample Bldg43-SS10. The percent difference exceeded criteria at 83%. A recovery test was analyzed on the same sample, and the cadmium recovery met criteria. All cadmium results for the samples in this SDG were flagged “J” due to the failing dilution test..

There were three 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.

The cadmium results in this SDG were considered to be 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 thirty (30) samples including twenty two (22) soil samples, two (2) MS/MSD pair, two (2) FDs and two (2) EBs. The samples were collected on March 5 and 6, 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 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 Bldg43-SS04 and B8-SS05 were designated for MS/MSD analysis on the COC.

There were two sets of LCS/LCSD samples analyzed for soils and one LCS/LCSD analyzed for waters. All LCS/LCSD recoveries were within acceptance criteria.

The MS/MSD recoveries failed to meet acceptance for both MS/MSD pair. The lead results in all associated samples 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 B8-SS02 and Bldg43-SS09 were collected in duplicate.

All LCS/LCSD RPDs were within acceptance criteria.

The RPD for the MS/MSD analyzed on sample Bldg43-SS04 was within acceptance criteria. However, the RPD for the MS/MSD analyzed on sample B8-SS05 was not compliant. All associated sample results were previously flagged “M” due to the non-compliant MS/MSD recoveries, so no additional corrective action was necessary.

The RPD for sample Bldg43-SS09 and its field duplicate was within acceptance criteria. However, the RPD for sample B8-SS02 was not compliant. All associated sample results were previously flagged “M” due to the non-compliant MS/MSD recoveries. 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 contamination of samples during collection and analysis.

Samples were analyzed following the COC and the analytical procedures described in the AFCEE QAPP. 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. The CCV injected at 3/1/03 00:00 had a non-compliant %D. However, all samples injected between this CCV and the previous one required further dilutions so no sample results were affected.
- All second source verification criteria were met. The initial calibration verification sample was prepared with a second source standard.
- A dilution test was run on sample EB-1 (collected March 5, 2003) but was not applicable because lead was not detected above the RL. A recovery test was analyzed on the same sample and the lead recovery met criteria.
- A dilution test was run on the ten thousand fold diluted digestate of sample B8-SS05. The percent difference exceeded criteria at 20%. A recovery test was analyzed on the same sample, but the lead recovery failed criteria at 70%. All associated sample results were previously flagged “M” due to the non-compliant MS/MSD recoveries. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.

- A dilution test was run on the ten thousand fold diluted digestate of sample B8-SS12. The percent difference exceeded criteria at 18%. A recovery rest was analyzed on the same sample, but the lead recovery failed criteria at 83%. All associated sample results were previously flagged “M” due to the non-compliant MS/MSD recoveries. No additional corrective action was necessary since the “M” flag supercedes the “J” flag in the AFCEE QAPP flag hierarchy.

There were three method blanks, two equipment blanks 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.

The lead result for the sample in this SDG was considered to be usable. The completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

This SDG consisted of fourteen (14) samples including ten (10) soil samples, one FD, one MS/MSD pair and one EB. The samples were collected on March 5 and 6, 2003 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471. All samples were prepared and analyzed following the procedures outlined in the AFCEE QAPP 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 Bldg43-SS04 was designated for MS/MSD analysis on the COC.

There were two LCS/LCSD pairs analyzed in association with the samples in this SDG. One LCS/LCSD was analyzed for waters and a second LCS/LCSD pair was analyzed for soils. All LCS/LCSD recoveries were within acceptance criteria.

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

Parent Sample	Analyte	MS %R	MSD %R	Criteria
Bldg43-SS04	Mercury	148	128	77-120%

The mercury results in all associated samples were flagged “M” in accordance with the AFCEE QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD and MS/MSD concentrations.

All LCS/LCSD and MS/MSD 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 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 sample was prepared with a second source standard.

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

The mercury result for the sample in this SDG was considered to be usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.