TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

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

INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on November 25, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for total petroleum hydrocarbons (TPH) and metals:

43241

There were no field quality control (QC) samples collected in association with this SDG. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, version 1.0. Four samples were collected and analyzed for TPH and the Texas 11 TCLP metals (arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver and antimony). Six soil samples were collected and analyzed for arsenic, barium, cadmium, chromium, nickel and zinc only.

The cooler associated with 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 CSSA QAPP, version 1.0. Information reviewed in the data packages included sample results; laboratory quality control results; method blanks; calibrations; 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 guidelines in the CSSA QAPP, version 1.0, were met.

TPH

General

The TPH portion of this SDG consisted of four (4) environmental soil samples. The samples were collected on November 25, 2003 and were analyzed for TPH according to the Texas Commission for Environmental Quality (TCEQ) Method Texas 1005.

All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) and LCS duplicate (LCSD) samples and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC.

All LCS recoveries were within acceptance criteria. All LCSD recoveries were within acceptance criteria, except for the following:

Carbon Range	%R	Criteria
>C12 - C28	132	75-130%

The LCSD recovery was above the upper control limit for this carbon range and all samples were non-detect, so no corrective action was necessary per the CSSA QAPP.

All spike surrogate recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the LCS/LCSD samples.

All LCS/LCSD 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

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

- All initial calibration criteria were met.
- All calibration verification criteria were met.

One method blank was analyzed in association with the TPH analyses in this SDG. The blank was free of TPH.

Completeness

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

All TPH results for the samples in this SDG were considered usable. The completeness of the TPH 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 six (6) environmental soil samples. The samples were collected on November 25, 2003 and were analyzed for a reduced list of ICP metals, which included barium, chromium, nickel, and zinc.

The ICP metals analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

All LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

All LCS/LCSD 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA 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 calibration criteria were met. The ICV was prepared using a secondary source.
- All interference check criteria were met.
- The dilution test was analyzed on sample B11-SW01 and was applicable for barium and nickel only. All other metals were below 50x the MDL. Barium and nickel both failed criteria as follows:

Metal	%D	Criteria
Barium	14.7	%D ≤ 10
Nickel	17.8	

Because no MS/MSD was available for these samples, the parent sample results for barium and nickel were flagged "M" in accordance with the CSSA QAPP. All other samples in this SDG were of a different matrix.

- The laboratory also analyzed a post digestion spike on sample B11-SW01. All recoveries were within acceptance criteria.

One method blank and several calibration blanks were analyzed in association with the ICP analyses in this SDG. All blanks were free of target 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 metals 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%.

ARSENIC

General

The arsenic portion of this SDG consisted of six (6) environmental soil samples. The samples were collected on November 25, 2003 and were analyzed for arsenic using USEPA SW846 Method 7060A.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

It should be noted that four of the six samples were analyzed at a 2x dilution due to the high levels of arsenic present. The samples requiring a 2x dilution were: B11-BOT01, B11-BOT04, B11-BOT05, and B11-SW01.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

The LCS/LCSD RPD was 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA 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 calibration criteria were met. The ICV was prepared using a secondary source.
- The dilution test was analyzed on sample B11-SW01. Arsenic failed criteria as follows:

Metal	%D	Criteria
Arsenic	39.3	%D ≤ 10

Because no MS/MSD was available for these samples, the parent sample result for arsenic was flagged "M" in accordance with the CSSA QAPP. All other samples were of a different matrix.

- The laboratory also analyzed a post digestion spike on sample B11-SW01. Arsenic failed to meet the acceptance criteria of 85-115% with a recovery of 83.8%. Because all associated sample results were previously flagged due to the failing dilution test, no additional corrective action was necessary.

One method blank and several calibration blanks were analyzed in association 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.

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

CADMIUM

General

The cadmium portion of this SDG consisted of six (6) environmental soil samples. The samples were collected on November 25, 2003 and were analyzed for cadmium using USEPA SW846 Method 7131A.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

It should be noted that three of the six samples were analyzed at a 2x dilution due to the high levels of cadmium present. The samples requiring a 2x dilution were: B11-BOT01, B11-BOT05, and B11-SW01.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

The LCS/LCSD RPD was 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA 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 calibration criteria were met. The ICV was prepared using a secondary source.

- No dilution test was required because all cadmium results were less than 25x the MDL.
- The laboratory analyzed a post digestion spike on sample B11-SW01. Cadmium failed to meet the acceptance criteria of 85-115% with a recovery of 145%. All cadmium results for samples of the same matrix were flagged "J" in accordance with the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association 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%.

TCLP ICP METALS

General

The TCLP ICP metals portion of this SDG consisted of four (4) environmental soil samples. The samples were collected on November 25, 2003 and were analyzed for a reduced list of ICP metals, which included antimony, arsenic, barium, beryllium, cadmium, chromium, lead, nickel, selenium, and silver.

The samples were leached using USEPA Method 1311 and the leachates were analyzed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

All LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

All LCS/LCSD 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;

- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

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

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All interference check criteria were met.
- The dilution test was analyzed on sample AOC50-WC04 and was applicable for barium only. All other metals were below 50x the MDL. Barium failed criteria as follows:

Metal	%D	Criteria
Barium	11.4	%D ≤ 10

Because no MS/MSD was available for these samples, all barium results for samples of the same matrix were flagged "M" in accordance with the CSSA QAPP.

- The laboratory analyzed a post digestion spike on sample AOC50-WC04. All recoveries were within acceptance criteria.

One TCLP method blank and several calibration blanks were analyzed in association with the ICP/MS analyses in this SDG. All blanks were free of target 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 TCLP metals results for the samples in this SDG were considered usable. The completeness for the TCLP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

TCLP MERCURY

General

The mercury portion of this SDG consisted of four (4) environmental soil samples. The samples were collected on November 25, 2003 and were leached using USEPA Method 1311. The leachates were then analyzed using USEPA SW846 Method 7470A. The samples in this SDG were analyzed following the procedures outlined in the CSSA

QAPP. All samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

The LCS/LCSD RPD was 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 CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.

One method blank and several calibration blanks were analyzed in association 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.

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