DRAFT
PROJECT REPORT

FIELD INVESTIGATION
FORMER INCINERATOR SITE
FT. RILEY, KANSAS

CONTRACT NO. DAKF19-01-P0091
SOLICITATION NO. DADF19-01-T0022

Submitted to:

Directorate of Environmental Safety
Ft. Riley
Building 407
Pershing Court
Ft. Riley, Kansas 66442

Submitted by:

Arrowhead Contracting, Incorporated
12920 Metcalf, Suite 150
Overland Park, Kansas 66213

April 13, 2001

April 18, 2001

Ms. Janet Wade
Department of Environmental Safety
Building 407
Pershing Court
Fort Riley, Kansas 66442

Draft Project Report — WWI
Soil Characterization at Former Incinerator Site
Contract No. DAKF19-01-P-0091

Dear Ms. Wade:

In accordance with change to Contract DAKF19-01-P-0091 for soil characterization at the former WWI-era incinerator site, please find attached two (2) copies of the Draft Project Report (referred to as Draft Data Assessment Report in Proposal dated March 22, 2001). This report package includes the data from XRF field screening and off-site confirmatory analysis (refer to Appendix A). A full set of sample collection field sheets are also transmitted with this report (refer to Appendix B).

Please note that Figure 1-1 (Sample Locations) is not included at this time, because it has not yet been completed. We expect to have the figure completed in the next couple of days. It will be mailed to you upon completion.

If you have any questions, feel free to contact me at (913) 814-9994.

Sincerely,

Scott Siegwald
Project Engineer

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1.0 Introduction

This document constitutes for the project report for the field investigation of the former WWI-era incinerator site at Fort Riley, Kansas. Arrowhead Contracting, Inc. of Overland Park, Kansas conducted the work in March and April of 2000 pursuant to the requirements of Contract DAKF19-01-P0091 and under the direction of the Ft. Riley Directorate of Environmental Safety (DES). The purpose of this report is to describe the field and analytical procedures used during the project and present the results and findings of the investigation.

WWI-era mapping indicates that an incinerator was formerly located immediately south of present Huebner Road and rail road tracks and west of Threemile Creek. Foundation and slab remnants were identified at the site. Based on observation of concrete remnants in the field and depiction of the footprint of the incinerator foundation on historical maps, it is estimated that former foundation covered an area of 10,750 ft^2 (refer to Figure 1-1) with a maximum length and width of 200 feet and 70 feet, respectively. The investigation was performed because the site could potentially contain heavy metals contamination in shallow soil as a result of historic operation of an incinerator by the military. The results of this field investigation will support Fort Riley's assessment of the environmental impact at the site.

The remainder of this report consists of five sections. Section 2.0 presents a discussion of the field activities and methods associated with the collection of soil samples. Section 3.0 presents a discussion of analytical activities and methods, including x-ray fluorescence (XRF) field screening and off-site confirmatory analysis of soil samples. Section 4.0 presents a discussion of the results and findings of the field investigation. A list of applicable references is presented in Section 5.0. In addition to the various tables and figures included with this report, two appendices are provided. Appendix A contains all of the XRF and laboratory data (including QA/QC). Appendix B contains the sample collection field sheets for soil samples.

2.0 Soil Sampling Activities

This section discusses the general sampling approach, the methods used for soil sampling, the sample labeling protocol, and field documentation and quality control procedures.

2.1 Sampling Locations, Approach, and Quantities

The sampling program included the collection of composite soil samples from 30 distinct locations identified as INC01 through INC30 (refer to Figure 1-1). The locations were selected randomly in the field to adequately cover the area interest. The rationale/approach for each group of sample locations is summarized by the following table.

INC01 - INC04, and INC28	Characterize soils within the limits of former foundation.
INC05, INC07 and INC10 – INC14	Characterize soils adjacent to the perimeter of former foundation.
INC06, INC08, INC09, and INC27	Characterize soils immediately upgradient of site.
INC10 and INC29	Characterize soils west of site.
INC25, INC26, and INC30	Characterize soils east of site.
INC15 – INC18	Characterize soils immediately downgradient of site.
INC19 – INC24	Characterize soils downgradient of site.

At each location, samples were collected from 0 in. to 6 in. below ground surface (bgs). At 22 of the 30 locations, samples were collected from 6 in. to 12 in. bgs. Samplers were unable to obtain a sample from 6 in. to 12 in. bgs at eight locations due to the presence of concrete or rock below the soil. At 6 locations (20% of the total number of locations), a third sample was collected from the depth interval 12 in. to 24 in. bgs. In total, 58 samples were collected from the 30 sample locations.

2.2 Sample Collection Methods

Sampling personnel staked out the locations on the morning of March 23. Locations were selected to provide areal coverage of the site in accordance with approach outlined in Section 2.1. The sampling team also collected the samples on March 23, 2001. Following sample collection, the locations were measured relative to the presumed corners of the former foundation based on the position of concrete slab remnants.

In general, sample collection was performed in accordance with the Field Sampling Plan and amendment (Arrowhead, 2001). At each location, soil samples were composited from five sample points (aliquots). Sample aliquots were identified by centering a pre-fabricated, wooden grid over the sample location. Discrete soil samples were then collected from each interval (0 in. to 6 in. bgs, 6 in. to 12 in. bgs, and, as necessary, 12 in. to 24 in. bgs) using a stainless-steel, small barrel drive sampler. Soil from each aliquot was composited by thoroughly mixing in a stainless steel bowl with a stainless steel spoon. All vegetation, debris, and particles exceeding 2 mm were removed and returned to the sample boring location. The soil was then placed into a quart-size, plastic (Ziploc) bag and labeled to identify the location and depth interval (refer to Section 2.3). The soil within the plastic bag was kneaded by hand to facilitate homogenization. To prevent cross-contamination, the sampling equipment was decontaminated between each sampling location and between the 6 in. to 12 in. bgs and 12 in. to 24 in. bgs depth intervals. Decontamination consisted of rinsing the equipment with clean water and scrubbing with phosphate-free soap, followed by rinsing with de-ionized water. After collection, samples were delivered to an on-site field laboratory for XRF analysis (refer to Section 3.1).

2.3 Sample Labeling and Identification

Soil samples were labeled with the sample ID, date, and time. Sample IDs consisted of a prefix corresponding to the location ID (e.g. INC08, INC24) followed by four digits representing the depth interval:

- "0006" – ground surface to 6 in. bgs
- "0612" – 6 in. to 12 in. bgs
- "1224" – 12 in. to 24 in. bgs

For example, the sample ID "INC230612" represented the sample from the 6 in. to 12 in. bgs depth interval from location INC23.

2.4 Field Documentation and Quality Control

The Site Supervisor and Field Team Leaders maintained a field logbook that documented the field and analytical activities and other pertinent information. The field logbooks were submitted to Ft. Riley DES at the conclusion of the project. In addition to the field logbooks, sampling technicians completed sample collection field sheets. The sample collection field sheets for this site are included in Appendix B.

The Site Supervisor completed a daily quality control (QC) inspection which was documented on a Daily QC Checklist. The Site Supervisor also completed a Daily Quality Control Report (DQCR). This report presented a summary of the day's field and analytical production, including XRF field screening results. The DQCR and QC checklist were previously submitted to the Ft. Riley DES project manager; thus, they are not provided with this document.

3.0 Field Screening and Analysis Activities

This section discusses the XRF field screening procedure, QA/QC field screening procedures, method detection limits, and confirmatory sampling and analysis.

3.1 Field Screening Methods

Samples collected during the project were screened/analyzed for the following heavy metals using a field-portable XRF spectrometer (Spectrace Model 9000 with a Model 9290 probe manufactured by Thermo MeasureTech of Round Rock, Texas):

- Barium
- Copper
- Lead
- Tin
- Zinc

The XRF bench-scale system consisted of the electronic unit (with software), instrument probe, lab stand, sample shield, and power and computer cords. Samples for this site were analyzed on April 2, 2001.

XRF field screening was performed in accordance with the Field Sampling Plan and amendment (Arrowhead, 2001), referencing SW-846 Method 6200 (EPA, 1998) and Thermo MeasureTech instructions and operating procedures (Thermo MeasureTech, 1994). At the beginning of the day, the FPXRF spectrometer was turned on and allowed to warm up for at least 10 minutes. After warming up, initial quality control checks (refer to Section 3.2) were performed. Soil samples were then prepared for analysis as follows:

- A small portion of soil was removed from the plastic bag collected in the field.
- The soil was wrapped in aluminum foil and dried in an oven for 2 – 4 hours at less than 150 °C.
- Following drying, the sample was further homogenized by grinding/pulverizing using a mortar and pestle to the extent the soil would pass through a 10-mesh sieve.
- Approximately 20 grams of the pulverized soil was placed in a 31-mm polyethylene sample cup. The remaining ground soil was placed in a plastic container, labeled, and retained for possible off-site confirmatory analysis (refer to Section 3.4).

- The sample cup was then be covered with Mylar x-ray film and secured with a polyethylene locking ring.

Following preparation, the polyethylene cup containing the soil was placed within the sample ring above the instrument probe aperture. The sample shield was then placed over the sample cup, and the sample analyzed. (Refer to Section 3.3 for a discussion of the total "counting time" required to analyze the sample.) After analysis was complete, the sample ID was entered into the Spectrace 9000, and the result (concentration and standard deviation) for each metal was manually recorded in the field logbook. The results were saved by the Spectrace 9000 computer, and were eventually downloaded to a personal computer in text (.txt) format. Following analysis, all equipment (sample cup, mortar, etc.) was thoroughly cleaned to prevent cross contamination. The soil from the sample cup was poured into the plastic container along with the corresponding pulverized soil that was retained for possible off-site confirmatory analysis.

3.2 Field Screening QA/QC

In accordance with the Field Sampling Plan and amendment (Arrowhead, 2001), the following quality assurance/quality control (QA/QC) checks were performed:

- Energy calibration (resolution) checks
- Instrument blanks
- Calibration verification (standard) checks
- Method blanks
- Precision checks

Table 3-1 presents a summary of each QA/QC check, including the frequency, rationale, and corrective actions. In addition to these QA/QC checks, the overall QA/QC program included analysis of confirmatory samples by an off-site laboratory to verify the comparability of XRF field screening results (refer to Section 3.4).

3.3 Field Screening Detection Limits

For XRF analysis, method detection limits are a function of the "counting time" – the amount of time each radioactive source within the instrument probe irradiates the sample. In general, increasing the source's counting time (up to a point) decreases the detection limit for the

elements detected by that source. The counting times are adjustable depending on the required detection limits and other data objectives.

The method detection limits were determined as described in SW-846 Method 6200 (EPA, 1998). According to Method 6200 Section 9.6, the results of replicate analyses of the low-concentration NIST standard can be used to calculate average site-specific method detection limits. The method detection limit is defined as three times the standard deviation (SD) of the results for the low concentration NIST sample.

At the beginning of the project, the low-concentration NIST standard (No. 2709) was analyzed to determine the initial detection limits and source counting times. The NIST sample was analyzed several times in replicate at various source counting times. This process was repeated iteratively until optimal detection limits and counting times were achieved. The estimated project-specific detection limits for the five required heavy metals are presented in Table 3-2. It should be noted that the NIST 2709 sample did not contain tin. Therefore, the detection limit for tin is estimated based on the results for site samples with low concentrations of tin.

According to Method 6200 Section 9.6, the SD-based detection limit criteria can be used to determine the usability of a particular result. A result greater than the average calculated detection limit (refer to Table 3-2), but less than three times the SD associated with the result, should not be used as a quantitative measurement. Conversely, a result is below the average calculated detection limit, but greater than three times the associated SD, should be coded as an estimated value. For this reason, project XRF results are reported as the measurement concentration (PPM) combined with the SD.

3.4 Confirmatory Sampling and Analysis

As part of the overall QA/QC program, 25 percent of all samples collected were submitted to an off-site laboratory for confirmatory analysis of the following metals:

Cd & Am sources would have covered these

- Antimony
- Arsenic
- Copper
- Lead
- Mercury
- Zinc

Why these versus the list on pg 3-1?
Seems worthless to do w/o field values to correlate

Off-site analytical services were provided by Continental Analytical Services, Inc. of Salina, Kansas. Samples were analyzed per SW-846 Method 6010B for antimony, arsenic, copper, lead and zinc and SW-846 Method 7471A for mercury.

Confirmatory samples were selected by the Field Supervisor to represent a range of lead concentrations and to provide spatial coverage of the site. Off-site laboratory QA/QC was verified through the collection and analysis of duplicate samples. Duplicate samples were collected at a frequency of 10% of the confirmatory samples. For the project, a total of 15 confirmatory samples and 2 confirmatory duplicate samples were collected and analyzed.

Confirmatory samples were collected/prepared at the on-site laboratory following XRF field screening. Each sample was taken from the pulverized soil that that was previously prepared for XRF field screening (refer to Section 3.1). Soil was placed in a 25-ml glass jar provided by the off-site laboratory, and the jar was filled to at least 33 percent capacity. The sample was then labeled as described in Section 2.3 plus "-L" or "-LD" at the end of the ID to denote a laboratory sample or laboratory duplicate, respectively. The samples were then packed in a cooler for shipment to the off-site laboratory. Chain-of-custody records were completed and placed in the cooler. The cooler was sealed and taped, and a custody seal was applied. The samples were shipped by Fed-Ex to the off-site laboratory.

delete

4.0 Field Investigation Results and Findings

This section presents the results of the field investigation, including a summary of XRF field screening, an assessment of the QA/QC performance of the XRF field screening process, an evaluation of the correlation between XRF results and confirmatory results, and a summary of laboratory analytical results. The data and findings/interpretations provided in the following sections are based on assessment of project results (XRF and confirmatory). For the purpose of data interpretation:

- "Elevated" results are defined as concentrations greater than the Kansas KSK Residential level for metals in soil (the assumed action levels).
- Lead is believed to be the governing contaminant at the site – i.e. the contaminant present at the highest concentration relative to the action level and for which any future actions (if necessary) would be initiated.

4.1 Field Screening Results

Table 4-1 provides a summary of the results of XRF field screening for metals at the site. Lead was detected at a concentration greater than 400 PPM in samples from INC10 and INC13, suggesting that lead may be present at elevated levels in soils immediately surrounding the former incinerator foundation.

4.2 Confirmatory Results

A summary of the laboratory analytical results for metals is presented in Table 4-2. Additionally, Figure 4-2 illustrates a comparison lead concentration to concentrations of arsenic, copper, and zinc in samples analyzed by the off-site laboratory. Overall, there appears to be a correlation between the lead concentration and the concentrations of other metals. High concentrations of arsenic, copper, and zinc are generally associated with high concentrations of lead; conversely, lower concentrations of lead are generally associated with lower concentrations of the other metals. The concentrations for copper appear to be the least correlated with lead. The following are additional generalized interpretations regarding the metals data:

- With a few exceptions (see below), arsenic, copper, zinc and mercury were not detected at levels significantly above the national ranges or averages for these metals in soil (refer to Table 4-2).

- Zinc, copper, and mercury concentrations in all samples were well below the Kansas RSK Residential levels.
- Arsenic was detected at a level slightly above Kansas RSK Residential criteria in samples from INC13, INC14, and INC15, indicating that arsenic may present at elevated levels on downgradient side of the former foundation. However, the concentrations were below the upper national range for arsenic in soil.
- The highest two detections for zinc (1,380 PPM and 1,040 PPM) were detected in the same samples as the highest two concentrations of arsenic - INC15006 and INC130006. The corresponding concentrations for lead were 170 PPM and 160 PPM, respectively.
- All antimony and the majority of mercury results were ND. Mercury results greater than ND were generally associated with higher results for other metals.

4.3 Field Screening QA/QC Assessment

The following table summarizes the results of QA/QC checks performed during XRF analysis (refer to Table 3-1).

Energy Calibration Checks - Number of Failed Checks	0
Analytical Background (Blank) Checks – Number of Failed Checks	0
Method Blanks – Number of Failed Checks	0
Precision Checks – Number of Failed Checks	0
Calibration Verification (Standard) Checks – Number of Failed Checks	0
Standard Checks – %D for Medium Concentration NIST Standard	-10.6% to +10.3%
Standard Check – %D for High Concentration NIST Standard	-2.7%
Precision Check – %RSD	7.7%

Per SW-846 Method 6200 (EPA, 1998), the acceptable %D is for a calibration verification (standard) check is +/-20%. The acceptable %RSD for a precision check is < 20%. Therefore, all calibration verification checks and the precision check were within the allowable limits. Based on successful calibration verification checks and energy calibration checks, it is apparent that the XRF system retained proper calibration thorough out the project. Precision check results indicate that the XRF system was able to reproduce a measurement for a standard of known

concentration. The success of analytical background checks and method blank analyses indicate that laboratory cross-contamination was adequately prevented and did not compromise the integrity of the XRF results.

4.4 Field Screening/Confirmatory Analysis Comparability

A summary of the comparability between XRF results and confirmatory results is provided by Table 4-3. The average %D for confirmatory results was –61%, -39%, and –13% for copper, lead, and zinc, respectively, indicating that the XRF results were typically higher than the corresponding confirmatory results. Of 45 confirmatory results (15 samples x 3 metals per sample), 28 results were within 50% of the corresponding XRF result. All confirmatory results (excluding the copper result for INC100006-L) were within 100% of the corresponding XRF result. A correlation coefficient (r^2) was also calculated for the data for each metal per SW-846 Method 6200. According to Section 9.7 of Method 6200 (EPA, 1998): "The correlation coefficient (r^2) for the results should be 0.7 or greater for the FPXRF data to be considered screening level data. If the r^2 is 0.9 or greater ..., the data could potentially meet definitive level data criteria." The correlation coefficients for copper, lead, and zinc were calculated to be 0.82, 0.95, and 0.94, respectively. Thus the XRF results significantly exceed the criteria for screening level data. XRF results for lead and zinc meet the criteria for definitive data. Overall, the relatively good comparability between confirmatory results and XRF results suggests that the XRF process was reliable and that the XRF data is accurate and valid.

4.5 Field Observations

Prior sampling, the Site Supervisor conducted a reconnaissance of the site to determine the preliminary sample locations. During the site reconnaissance, an empty, rusted 55-gallon drum was observed approximately 50 southwest of the former incinerator foundation. No other significant observations were noted during the reconnaissance.

Additionally, during sample collection and XRF analysis, samples were visually assessed for the presence of residual ash or other waste-related materials. The following samples were noted as containing a small pieces of hardened, black, slag-like material: INC030006, INC080006, INC130006, INC140006, INC141224, and INC150006. The material was relatively porous and hand some structure, but was not conclusively identified as ash.

5.0 References

Arrowhead Contracting, Inc. Draft-Final Sampling and Field Sampling Plan and Health and Safety Plan. March 2001.

Arrowhead Contracting, Inc. Quality Control Checks - Amendment to Field Sampling Plan and Health and Safety Plan. March 2001

Thermo MeasureTech. Spectrace 9000 Standard Operating Check – Soils Application. May 1994.

Thermo MeasureTech. Spectrace 9000 Portable XRF Analyzer. August 1994.

U.S. Environmental Protection Agency . SW-846 Method 6200 - *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*. July 1998.

TABLES

Table 3-1. XRF Field Screening QA/QC Checks

QC Check	Purpose and Method of Performance	Frequency and Rationale	Corrective Action
Energy Calibration	To verify instrument resolution and check for instrument "drift" (i.e. shifting of x-ray lines). Performed by analyzing pure iron (Fe) sample and then checking to be sure the Fe spectrum peak is correctly positioned and has the correct intensity (in kiloelectron volts).	This check will be performed at the beginning of each day. A successful energy calibration check at the beginning of the day adequately confirms that (1) the instrument is operating properly and is ready for ensuring analyses and (2) the instrument was operating properly during the previous day. Energy calibration checks will also be performed randomly during analysis.	If an energy calibration check fails, then the results for samples analyzed between the failed check and the previous successful check will be deemed invalid. The corresponding samples will be re-analyzed upon making the appropriate adjustments to the instrument
Calibration Verification	To verify the ability of the instrument to accurately quantify analytes of interest. Performed by analyzing standards with known (certified) concentrations of target analytes and calculating percent difference (%D) from the certified values.	The calibration verification check will be performed using National Institute of Standards & Technology (NIST) standards. The check will be performed in accordance with Method 6200: at the beginning and end of each day and during analysis.	If the calibration verification check fails, then the results for samples analyzed between the failed check and the previous successful check will be deemed invalid. The corresponding samples will be re-analyzed upon making the appropriate adjustments to the instrument.
Instrument Blank	To verify that contamination is not being spread to the instrument probe. Performed by analyzing a quartz block.	The instrument blank check will be performed using the quartz block during analysis (random frequency) and at the end of the day. A successful instrument blank check at the end of the day confirms that the probe is clean and ready for the next day of analysis. Performing successful checks during analysis ensures that samples analyzed prior to the check were not affected by contamination in the probe. As a further check of proper instrument decontamination, the low-concentration NIST standard (with lead concentration below the instrument detection limit) will be periodically analyzed. A result for lead below the detection limit will confirm that the probe is clean.	If the instrument blank check fails, then the results for samples analyzed between the failed check and the previous successful check will be deemed invalid. The corresponding samples will be re-analyzed upon cleaning (decontaminating) the instrument probe.

Method Blank	To verify that samples are not cross-contaminated during the sample preparation process and that laboratory decontamination procedures are effective. Performed by analyzing a "clean" sample after undergoing the sample preparation process as regular samples.	The method blank check will be performed ongoing during analysis. "Clean" site samples will be used as the medium for the check – i.e. samples with "ND" (below the display threshold of the instrument) results for lead and/or results for lead well below 3 standard deviations. The existence of these "clean" samples following samples with positive results for lead confirms that contamination is not being spread by the sample preparation process.	If method checks fail, then the results for samples analyzed since the previous successful check will be deemed invalid. The corresponding samples will be re-analyzed upon identifying and correcting the cause of cross-contamination.
Precision Check	To verify the ability of the instrument to reproduce results for target analytes. Performed by analyzing standards in replicate and then calculating relative standard deviation (RSD).	The precision check will be performed once each day (per Method 6200) by analyzing a NIST standard sample 5 times in replicate. The RSD will then be calculated. An acceptable RSD is less than 20%.	If the instrument cannot ensure precision within the acceptable RSD, samples prior to the failed precision check will be deemed invalid. The corresponding samples will be re-analyzed upon making the appropriate adjustments to the instrument.

Table 3-2. Project-Specific Method Detection Limits

Element	Detection Limit Cd-109 Source	Detection Limit Am-241 Source
Lead	50 PPM	---
Copper	120 PPM	---
Barium	---	100 PPM
Zinc	110 PPM	---
Tin	---	90 PPM

NOTES:

- The detection limits presented above are based on replicate analysis of the low-concentration NIST Standard (No. 2709) using a count time of 130 seconds for the Cd-109 source, 40 seconds for the Am-241 source, and 40 seconds for the Fe-55 source.
- Tin is not a component of the low-concentration NIST standard. Therefore, the detection limit is estimated using results from low-concentration site samples.

Table 4-1. Summary of XRF Field Screening Results for Metals

Metal	No. of Samples	No. of Samples "BD"	Kansas RSK Residential Level - Soil	No. of Samples > KS RSK	Location(s) of Sample(s) > KS RSK
Barium	58	0	5,500 PPM	0	---
Copper	58	18	2,900 PPM	0	---
Lead	58	10	400 PPM	2	INC10 INC13
Tin	58	46	---	---	---
Zinc	58	12	23,000 PPM	0	---

NOTES:

BD = Low results below the display threshold of XRF spectrometer

Kansas RSK Residential Levels taken from table provided in Statement of Work (March 21, 2001).

Table 4-2. Summary of Confirmatory Analytical Results for Metals

Metal	Low Conc. (PPM)	High Conc. (PPM)	Kansas RSK Residential Level – Soil	No. of Samples > KS RSK	Location(s) of Sample(s) > KS RSK
Antimony	ND(2.0)	ND(2.0)	31 PPM	0	---
Arsenic	2.9	23.3	11 / 29 PPM	3	INC13 INC14 INC15
Copper	7.6	88.2	2,900 PPM	0	---
Lead	10.9	488	400 PPM	1	INC10
Mercury	ND(0.1)	0.2	2 PPM	0	---
Zinc	37.6	1,380	23,000 PPM	0	---

NOTES:

The above data excludes sample INC100006-L due to anomalously high result for copper.

Kansas RSK Residential Levels taken from table provided in Statement of Work (March 21, 2001).

The following national ranges and averages for inorganics in soil [taken from *Hazardous Waste Land Treatment*, U.S. Environmental Protection Agency, Office of Surface Water (OSWGR), SW-274, April 1983]:

- Antimony – 2 – 10 PPM
- Arsenic – 1 – 50 PPM (avg. 5 PPM)
- Copper – 2 – 100 PPM (avg. 30 PPM)
- Lead – 2 – 200 PPM (avg. 10 PPM)
- Mercury – 0.01 – 0.3 PPM (avg. 0.03 PPM)
- Zinc – 10 – 300 PPM (avg. 50 PPM)

Table 4-3. Summary of Correlation Between XRF Results and Confirmatory Results

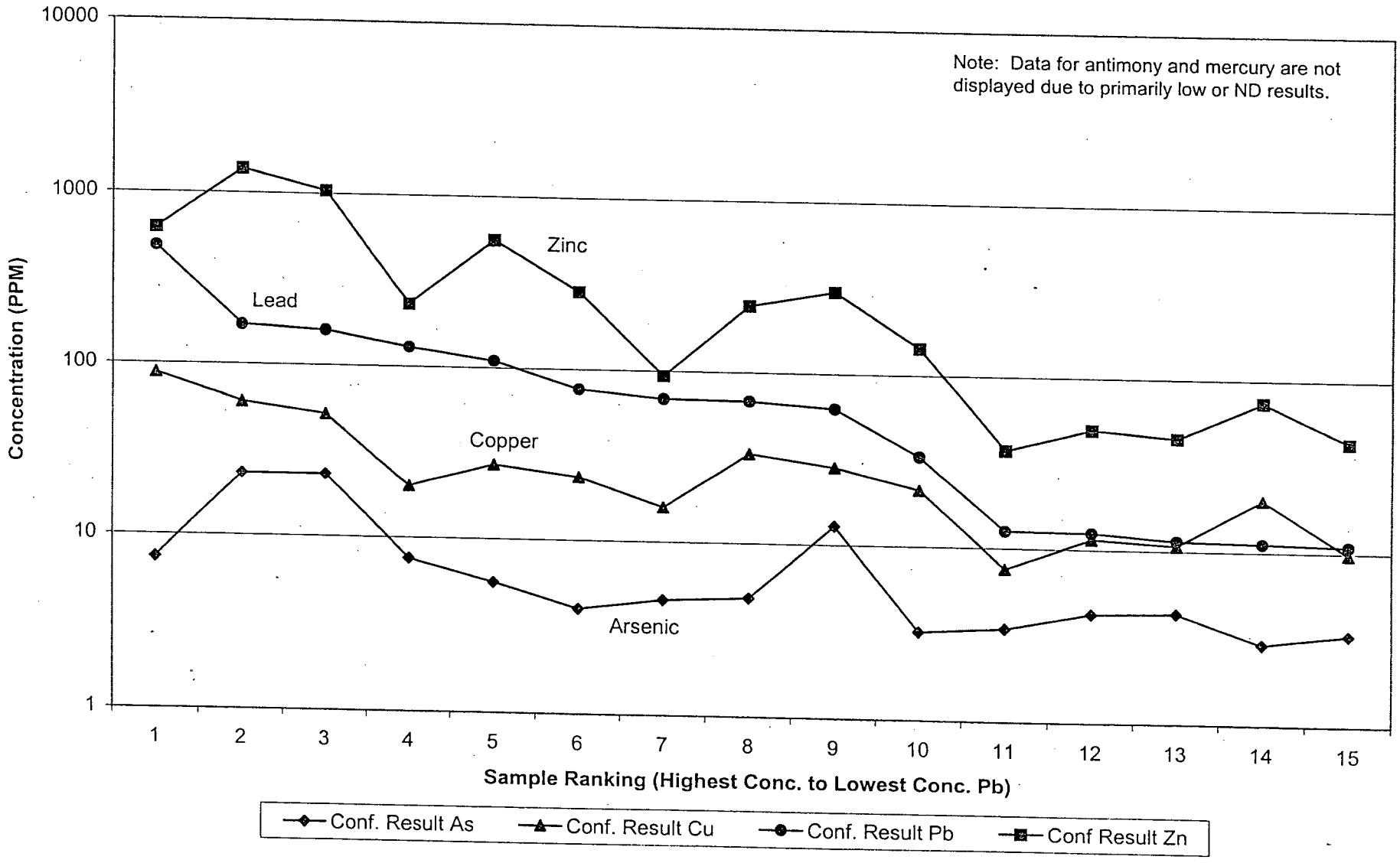
Element	Average %D	Correlation Coefficient (r^2)
Copper	-61%	0.82
Lead	-39%	0.95
Zinc	-13%	0.94

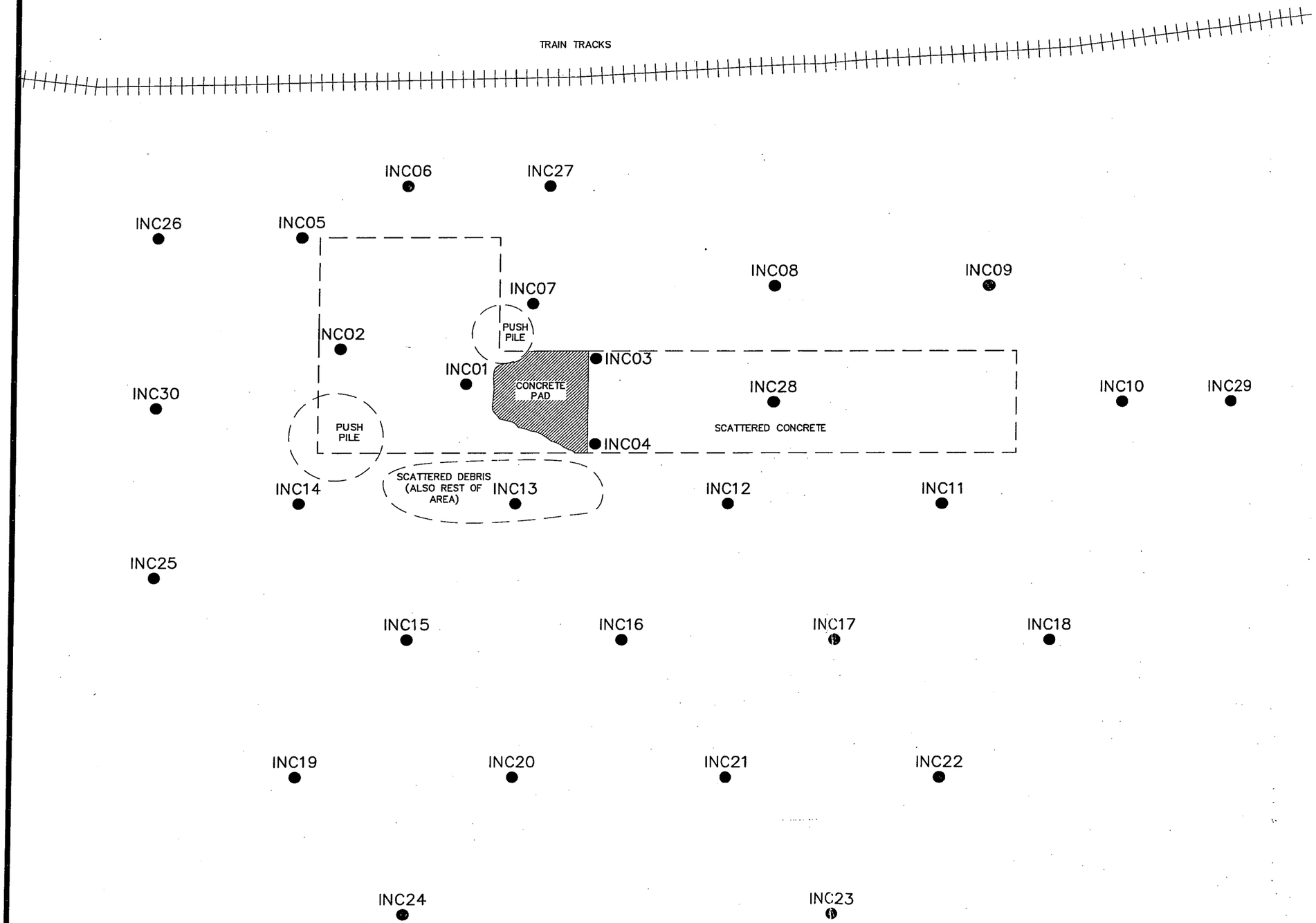
NOTES:

- %D = Percent difference from XRF result [calculated by (Conf Result – XRF Result) / (XRF Result) x 100]
- A positive %D indicates that the confirmatory result was greater than the XRF results. Conversely, a negative %D indicates that the XRF result was greater than the confirmatory result.
- The above does not incorporate the result for INC100006-L, due to an anomalously high result for copper.
- Correlation data for antimony is not applicable since all confirmatory results were ND.
- According to Section 9.7 of Method 6200 (EPA, 1998): "The correlation coefficient (r^2) for the results should be 0.7 or greater for the FPXRF data to be considered screening level data. If the r^2 is 0.9 or greater ..., the data could potentially meet definitive level data criteria."

FIGURES

Figure 4-1. Comparison of Lead Results to Other Metals





LEGEND:

INC29● SAMPLE LOCATIONS

— — — APPROXIMATE LIMITS OF FORMER FOUNDATION BASED ON VISUAL OBSERVATION OF CONCRETE/SLAB REMNANTS

NOTE:

1. FOUNDATION LIMITS AND SAMPLE LOCATION ARE APPROXIMATE.

N

30 0 30 60

SCALE FEET

SCALE IS APPROXIMATE

Arrowhead Contracting Inc.
Overland Park, Kansas 66213

CLIENT: FORT RILEY DES

LOCATION: FORT RILEY, KANSAS

TITLE: **SAMPLE LOCATIONS**

DRAWN BY	CHK'D. BY	APPROVED BY
R.A.D.	S.F.S.	
PROJ. NO.	DATE	FIG. NO.
01-224	4/12/01	1-1

April 19, 2001 11:
H:\1999033.66\FIG\ (RAD)

APPENDIX A

XRF FIELD SCREENING AND CONFIRMATORY ANALYSIS RESULTS – ALL DATA

XRF Field Screening Results
Ft. Riley Incinerator Site

Date Anal.	Time Anal.	Sample ID	Result Cu	SD Cu	Result Zn	SD Zn	Result Pb	SD Pb	Result Ba	SD Ba	Result Sn	SD Sn
4/2/01	9:58	INC010006	63	33	38	30.7	BD	BD	762	27.7	37	29.3
4/2/01	14:52	INC020006	44	32.3	45	31.6	23	14	918	30.8	BD	BD
4/2/01	12:50	INC020612	62	32.7	53	31.2	25	14.3	850	29.3	BD	BD
4/2/01	12:00	INC021224	68	33	BD	BD	21	14	891	30.1	BD	BD
4/2/01	13:29	INC030006	BD	BD	197	39.5	74	17.5	595	25.1	BD	BD
4/2/01	10:18	INC040006	36	33	292	44.4	157	21.7	468	22.8	37	27.6
4/2/01	15:44	INC050006	BD	BD	211	39.7	40	15.3	940	31.4	BD	BD
4/2/01	14:39	INC050612	54	32.9	134	36	17	13.8	593	24.6	BD	BD
4/2/01	16:10	INC060006	135	39.4	393	47.9	120	19.6	373	20.6	BD	BD
4/2/01	11:55	INC070006	BD	BD	940	65.3	200	23.6	389	20.9	BD	BD
4/2/01	13:41	INC080006	48	33.5	111	35.6	108	19.6	943	31.3	BD	BD
4/2/01	9:46	INC080612	70	33.7	66	32.1	30	14.6	785	28.1	BD	BD
4/2/01	11:01	INC081224	34	31.4	54	31.8	50	16	818	28.9	BD	BD
4/2/01	15:51	INC090006	52	35.7	255	44.6	123	21.3	754	29.4	BD	BD
4/2/01	12:14	INC090612	81	36.3	84	35.4	20	14.8	932	31.7	BD	BD
4/2/01	14:04	INC100006	123	38.6	556	53.3	544	35.4	716	28.2	70	31.5
4/2/01	12:20	INC100612	BD	BD	142	36.8	206	24	895	30.8	71	32.7
4/2/01	12:07	INC110001	81	41.7	980	73.5	204	27.8	1447	43.2	BD	BD
4/2/01	11:12	INC110612	40	33.8	282	44.3	168	23.6	1155	36.3	BD	BD
4/2/01	15:15	INC120006	100	43.6	583	62.3	232	10.3	1938	51.6	52	37.1
4/2/01	13:35	INC120612	BD	BD	97	33.8	BD	BD	870	29.8	BD	BD
4/2/01	14:17	INC130006	108	48.1	2010	106	272	32.8	1737	50.2	44	39.9
4/2/01	10:26	INC130612	255	62.3	2120	117	515	45.4	1852	55.2	55	45.1
4/2/01	15:20	INC140006	76	34.5	120	35.9	45	16.2	820	29.2	37	29.9
4/2/01	11:32	INC140612	104	38.6	302	45.1	72	18.6	957	32.6	BD	BD
4/2/01	12:37	INC141224	82	40.5	569	59.2	149	24.8	1640	45.4	BD	BD
4/2/01	15:31	INC150006	158	50.8	1570	96.3	365	37.4	1155	41.6	97	41.6
4/2/01	14:57	INC160006	BD	BD	68	33.6	BD	BD	826	29.9	BD	BD
4/2/01	9:40	INC160612	BD	BD	91	34.7	32	15.2	969	31.9	BD	BD
4/2/01	9:52	INC170006	89	37.2	60	34	BD	BD	1052	33.5	BD	BD
4/2/01	14:31	INC170612	74	33.8	BD	BD	BD	BD	811	28.8	BD	BD
4/2/01	11:26	INC180006	47	32.6	63	32.5	51	16.2	802	28.9	BD	BD
4/2/01	13:47	INC180612	BD	BD	BD	BD	55	16.7	875	30.2	BD	BD
4/2/01	11:39	INC190006	BD	BD	47	31.2	16	14.3	858	29.6	BD	BD
4/2/01	11:49	INC190612	BD	BD	BD	BD	BD	BD	821	29.2	BD	BD
4/2/01	15:38	INC191224	BD	BD	66	32.8	28	15	879	30.4	67	32
4/2/01	11:20	INC200006	BD	BD	45	32.1	25	14.9	946	31.6	BD	BD
4/2/01	14:25	INC200612	75	34	74	32.7	33	14.7	811	28.8	BD	BD
4/2/01	10:11	INC210006	50	33.3	104	35.2	BD	BD	910	30.9	BD	BD
4/2/01	14:46	INC210612	77	34.5	BD	BD	51	16.5	812	28.9	BD	BD
4/2/01	14:11	INC211224	91	34.4	BD	BD	36	14.8	824	28.8	37	29.7
4/2/01	16:04	INC220006	80	34.5	57	32.3	59	17	869	30.2	BD	BD
4/2/01	15:09	INC220612	51	32.7	BD	BD	BD	BD	857	29.7	BD	BD
4/2/01	15:26	INC230006	BD	BD	BD	BD	29	14.6	748	27.8	BD	BD
4/2/01	15:03	INC230612	BD	BD	82	33.2	BD	BD	760	28.2	BD	BD
4/2/01	13:59	INC240006	BD	BD	53	32.1	32	14.7	893	30.3	BD	BD
4/2/01	11:07	INC240612	BD	BD	94	34.3	15	14.6	848	29.7	BD	BD
4/2/01	13:54	INC250006	41	32.5	127	36.1	37	15.8	803	29.1	BD	BD
4/2/01	10:50	INC250612	93	35.3	BD	BD	35	14.9	797	28.6	BD	BD

XRF Field Screening Results
Ft. Riley Incinerator Site

Date Anal.	Time Anal.	Sample ID	Result Cu	SD Cu	Result Zn	SD Zn	Result Pb	SD Pb	Result Ba	SD Ba	Result Sn	SD Sn
4/2/01	11:44	INC251224	64	33.8	BD	BD	BD	BD	892	30.4	43	31
4/2/01	10:56	INC260006	132	37.5	51	31.5	18	14.3	810	28.5	BD	BD
4/2/01	12:32	INC260612	53	31.6	BD	BD	40	14.6	781	27.9	BD	BD
4/2/01	9:33	INC270006	BD	BD	269	43.1	119	19.3	308	18.7	BD	BD
4/2/01	15:58	INC280006	59	34.8	448	50	150	21.2	462	22.2	BD	BD
4/2/01	10:05	INC290006	BD	BD	BD	BD	36	15	831	28.9	BD	BD
4/2/01	10:32	INC290612	36	30.8	35	30.2	20	13.4	787	27.7	BD	BD
4/2/01	10:45	INC300006	84	35.9	135	32.1	36	15.4	633	26	BD	BD
4/2/01	12:44	INC300612	68	33.8	228	40.2	45	16.9	902	30.6	BD	BD

Notes: Results are reported in parts per million (PPM)
SD = Standard deviation
BD = Low results suppressed (not displayed) by Spectrace 9000
ND (2.0) = Not detected (detection limit)

General: According to SW-846 Method 6200 - A measurement above the average calculated or manufacturer's detection limit, but smaller than three times its SD, should not be used as a quantitative measurement. Conversely, if the measurement is below the average calculated or manufacturer's detection limit, but greater than three times its associated SD, it should be coded as an estimated value.

Per SW-846 Method 6200 (Section 9.6) detection limits were calculated based on analysis of the low-concentration NIST sample. Approximate detection limits were: Pb - 50 PPM, Cu - 120 PPM, Ba - 100 PPM, Zn - 110 PPM, and Sn - 90 PPM.

Results of Confirmatory Analyses and Analyses of Other Metals
Ft. Riley Former Incinerator Site

Date Anal. XRF	XRF Sample ID	XRF Result Cu	XRF SD Cu	XRF Result Pb	XRF SD Pb	XRF Result Zn	XRF SD Zn	Confirmatory ID	Date Submitted to Lab	Conf. Result Sb	Conf. Result As	Conf. Result Cu	Conf. Result Pb	Conf. Result Zn	Conf. Result Hg
4/2/01	INC010006	63	33	BD	BD	38	30.7	INC010006-L	4/3/01	ND(2.0)	2.9	20	11.2	74	ND(0.1)
4/2/01	INC030006	BD	BD	74	17.5	197	39.5	INC030006-L	4/3/01	ND(2.0)	3.2	21.5	33.8	144	0.1
4/2/01	INC060006	135	39.4	120	19.6	393	47.9	INC060006-L	4/3/01	ND(2.0)	4.8	33.8	67.8	245	ND(0.1)
4/2/01	INC070006	BD	BD	200	23.6	940	65.3	INC070006-L	4/3/01	ND(2.0)	5.6	27.5	110	561	0.2
4/2/01	INC080006	48	33.5	108	19.6	111	35.6	INC080006-L	4/3/01	ND(2.0)	4.6	16	68.7	94.1	ND(0.1)
4/2/01	INC100006	123	38.6	544	35.4	556	53.3	INC100006-L	4/3/01	ND(2.0)	5.5	2320	448	663	0.2
4/2/01	INC100006	123	38.6	544	35.4	556	53.3	INC100006-LD	4/3/01	ND(2.0)	7.4	88.2	488	624	0.2
4/2/01	INC110612	40	33.8	168	23.6	282	44.3	INC110612-L	4/3/01	ND(2.0)	7.6	20.2	130	231	ND(0.1)
4/2/01	INC130006	108	48.1	272	32.8	2010	106	INC130006-L	4/3/01	ND(2.0)	23.3	51.9	160	1040	ND(0.1)
4/2/01	INC141224	82	40.5	149	24.8	569	59.2	INC141224-L	4/3/01	ND(2.0)	12.9	28.7	62.5	301	ND(0.1)
4/2/01	INC150006	158	50.8	365	37.4	1570	96.3	INC150006-L	4/3/01	ND(2.0)	23.3	60	170	1380	0.2
4/2/01	INC190612	BD	BD	BD	BD	BD	BD	INC190612-L	4/3/01	ND(2.0)	4.3	10.7	11.4	45.6	ND(0.1)
4/2/01	INC190612	51	32.7	BD	BD	BD	BD	INC220612-L	4/3/01	ND(2.0)	4.2	11.5	12.5	50.2	ND(0.1)
4/2/01	INC220612	51	32.7	BD	BD	BD	BD	INC220612-LD	4/3/01	ND(2.0)	4.1	11.3	11.9	48.7	ND(0.1)
4/2/01	INC240612	BD	BD	15	14.6	94	34.3	INC240612-L	4/3/01	ND(2.0)	3.3	9.8	10.9	43.8	ND(0.1)
4/2/01	INC260612	53	31.6	40	14.6	BD	BD	INC260612-L	4/3/01	ND(2.0)	3.4	7.6	12.6	37.6	ND(0.1)
4/2/01	INC280006	59	34.8	150	21.2	448	50	INC280006-L	4/3/01	ND(2.0)	4	23.7	76.5	284	ND(0.1)

Notes: Results are reported in parts per million (PPM).
SD = Standard deviation
BD = Low results suppressed (not displayed) by Spectrace 9000
ND (2.0) = Not detected (detection limit)

General: According to SW-846 Method 6200 - A measurement above the average calculated or manufacturer's detection limit, but smaller than three times its SD, should not be used as a quantitative measurement. Conversely, if the measurement is below the average calculated or manufacturer's detection limit, but greater than three times its associated SD, it should be coded as an estimated value.

Per SW-846 Method 6200 (Section 9.6) detection limits were calculated based on analysis of the low-concentration NIST sample. Approximate detection limits were: Pb - 50 PPM, Cu - 120 PPM, Ba - 100 PPM, and Zn - 110 PPM.

Correlation Between XRF Results and Confirmatory Results
Ft. Riley Former Incinerator Site

Sample ID	XRF Result Cu	Conf. Result Cu	XRF Result Pb	Conf. Result Pb	XRF Result Zn	Conf. Result Zn	Correlation (%D from XRF Result) Cu	Correlation (%D from XRF Result) Pb	Correlation (%D from XRF Result) Zn
INC010006	63	20	**15**	11.2	38	74	-68	-25	95
INC030006	**40**	21.5	74	33.8	197	144	-46	-54	-27
INC060006	135	33.8	120	67.8	393	245	-75	-44	-38
INC070006	**40**	27.5	200	110	940	561	-31	-45	-40
INC080006	48	16	108	68.7	111	94.1	-67	-36	-15
INC100006	123	88.2	544	488	556	624	-28	-10	12
INC110612	40	20.2	168	130	282	231	-50	-23	-18
INC130006	108	51.9	272	160	2010	1040	-52	-41	-48
INC141224	82	28.7	149	62.5	569	301	-65	-58	-47
INC150006	158	60	365	170	1570	1380	-62	-53	-12
INC190612	**40**	10.7	**15**	11.4	**40**	45.6	-73	-24	14
INC220612	51	11.3	**15**	11.9	**40**	48.7	-78	-21	22
INC240612	**40**	9.8	15	10.9	94	43.8	-76	-27	-53
INC260612	53	7.6	40	12.6	**40**	37.6	-86	-69	-6
INC280006	59	23.7	150	76.5	448	284	-60	-49	-37
						Average:	-61	-39	-13

Notes:

%D = Percent difference from XRF result

XRF results originally BD (below display threshold of instrument) are assigned a value of approximately one third the XRF detection limit for purposes of calculating the %D. The affected results are represented in bold.

For INC100006, the duplicate confirmatory sample result (INC100006-LD) was used to calculate correlation due to anomalously high copper result for INC100006-L.

Results of Calibration Verification Checks and Precision Checks
Ft. Riley Former Incinerator Site

Date Anal.	QC Check ID	Time Anal.	Result Pb	SD Pb	Result Zn	SD Zn	Result Ba	SD Ba	QC Check Description	%D Pb	%D Zn	%D Ba	Precision SD	Precision RSD
4/2/01	NIST2709-3	9:22	16	13.1	76	33.4	800	29.3	Standard Check	NA	NA	-17.4		
4/2/01	NIST2710-1	8:55	5380	132	6350	186	---	---	Standard Check	-2.7	-8.7	NA		
4/2/01	NIST2711-1	9:03	1193	58.1	369	54	715	28.5	Standard Check	2.7	5.4	-1.5		
4/2/01	NIST2711-2	13:22	1223	51.8	293	44.4	675	27.7	Standard Check	5.2	-16.3	-7.0		
4/2/01	NIST2711-3	16:19	1170	50.8	---	---	---	---	Precision/Calibration Check	0.7	---	---		
4/2/01	NIST2711-4	16:25	1195	51.5	---	---	---	---	Precision Check	2.8	---	---		
4/2/01	NIST2711-5	16:29	1282	53.3	---	---	---	---	Precision Check	10.3	---	---		
4/2/01	NIST2711-6	16:35	1121	49.9	---	---	---	---	Precision Check	-3.5	---	---		
4/2/01	NIST2711-7	16:40	1039	47.9	---	---	---	---	Precision Check	-10.6	---	---	89.9	7.7

Notes:

BD = Low result suppressed (not displayed) by Spectrace 9000
NA = Not applicable; result below the detection limit
SD = Standard deviation
RSD = Relative standard deviation
%D = Percent difference from certified (true) value

NIST certified concentrations (PPM):

NIST2709 (low concentration) = Pb 18.9 +/- 0.5, Zn 106 +/-3, Ba 968 +/- 40
NIST 2711 (medium concentration) = Pb 1162 +/- 31, Zn 350.4 +/- 4.8, Ba 726 +/- 38
NIST 2710 (high concentration) = Pb 5532 +/- 80, Zn 6952 +/- 91, Ba 707 +/- 51

General:

According to SW-846 Method 6200, the measured value should be within +/- 20% (%D) of the true value for the calibration verification check to be acceptable.

According to SW-846 Method 6200, for XRF data to be adequately precise, the RSD should not be greater than 20 percent.

Continental
Analytical Services, Inc.

04/17/2001

Arrowhead Contracting
Attn: Scott Siegwald
12920 Metcalf Ste.150
Overland Park, KS 66213

Date Received: 04/04/2001
Continental File No.: 7121
Continental Order No.: 69906
Your P.O./Project No.: 2328

Dear Mr. Siegwald:

This laboratory report consisting of 13 pages contains the analytical results for the following samples:

CAS LAB ID #	SAMPLE DESCRIPTION	SAMPLE TYPE	DATE SAMPLED
01040228	INC110612-L	Solid	03/23/2001
01040229	INC150006-L	Solid	03/23/2001
01040230	INC220612-L	Solid	03/23/2001
01040231	INC220612-LD	Solid	03/23/2001
01040232	INC100006-L	Solid	03/23/2001
01040233	INC100006-LD	Solid	03/23/2001
01040234	INC260612-L	Solid	03/23/2001
01040235	INC130006-L	Solid	03/23/2001
01040236	INC190612-L	Solid	03/23/2001
01040237	INC060006-L	Solid	03/23/2001
01040238	INC240612-L	Solid	03/23/2001
01040239	INC010006-L	Solid	03/23/2001
01040240	INC280006-L	Solid	03/23/2001
01040241	INC070006-L	Solid	03/23/2001
01040242	INC141224-L	Solid	03/23/2001
01040243	INC030006-L	Solid	03/23/2001
01040244	INC080006-L	Solid	03/23/2001

Thank you for choosing Continental for this project. If you have any questions, please contact me at (800)-535-3076.

CONTINENTAL ANALYTICAL SERVICES, INC.

Brian T. O'Donnell
Project Manager

1804 Glendale Road • Salina, Kansas 67401-6675
785-827-1273 • 800-535-3076 • FAX 785-823-7830

Continental Analytical Services, Inc.

Client: Arrowhead Contracting
Attn: Scott Siegwald
12920 Metcalf Ste.150
Overland Park, KS 66213

Date Sample Rptd: 04/17/2001
Date Sample Recd: 04/04/2001
Continental File No: 7121
Continental Order No: 69905
Client P.O.: 2328

Lab Number: 01040228
Sample Description: INC110612-L

Date Sampled: 03/23/2001
Time Sampled: 1330

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	7.6	mg/kg	04/13/2001	4866/26
Copper, Total	20.2	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	130.	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/343
Zinc, Total	231.	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040228

Lab Number: 01040229
Sample Description: INC150006-L

Date Sampled: 03/23/2001
Time Sampled: 1410

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	23.3	mg/kg	04/13/2001	4866/26
Copper, Total	60.0	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	170.	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	0.2	mg/kg	04/16/2001	4425/343
Zinc, Total	1380.	mg/kg	04/13/2001	4866/27

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B

-Continued-

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT

Page: 3

Client: Arrowhead Contracting
Lab Number: 01040229

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040229

Lab Number: 01040230
Sample Description: INC220612-L

Date Sampled: 03/23/2001
Time Sampled: 1520

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.2	mg/kg	04/13/2001	4866/26
Copper, Total	11.5	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	12.5	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	50.2	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040230

-Continued-

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT

Client: Arrowhead Contracting

Lab Number: 01040231
Sample Description: INC220612-LD

Date Sampled: 03/23/2001
Time Sampled: 1520

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.1	mg/kg	04/13/2001	4866/26
Copper, Total	11.3	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	11.9	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	48.7	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040231

Lab Number: 01040232
Sample Description: INC100006-L

Date Sampled: 03/23/2001
Time Sampled: 1320

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	5.5	mg/kg	04/13/2001	4866/26
Copper, Total	2320.	mg/kg	04/13/2001	4866/27
Lead, Total (ICP)	448.	mg/kg	04/13/2001	4866/26
Mercury, Total	0.2	mg/kg	04/16/2001	4425/344
Zinc, Total	663.	mg/kg	04/13/2001	4866/27

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B

-Continued-

Continental Analytical Services, Inc.

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 5

Client: Arrowhead Contracting
Lab Number: 01040232

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040232

Lab Number: 01040233
Sample Description: INC100006-LD

Date Sampled: 03/23/2001
Time Sampled: 1320

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	7.4	mg/kg	04/13/2001	4866/26
Copper, Total	88.2	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	488.	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	0.2	mg/kg	04/16/2001	4425/344
Zinc, Total	624.	mg/kg	04/13/2001	4866/27

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040233

Lab Number: 01040234
Sample Description: INC260612-L

Date Sampled: 03/23/2001
Time Sampled: 1600

Analysis	Concentration	Units	Date Analyzed	Book/Page

-Continued-

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 6

Client: Arrowhead Contracting
Lab Number: 01040234
Sample Description: INC260612-L

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/25
Arsenic, Total (ICP)	3.4	mg/kg	04/13/2001	4866/25
Copper, Total	7.6	mg/kg	04/13/2001	4866/25
Lead, Total (ICP)	12.6	mg/kg	04/13/2001	4866/25
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	37.6	mg/kg	04/13/2001	4866/25

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040234

Lab Number: 01040235
Sample Description: INC130006-L

Date Sampled: 03/23/2001
Time Sampled: 1350

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	23.3	mg/kg	04/13/2001	4866/26
Copper, Total	51.9	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	160.	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	1040.	mg/kg	04/13/2001	4866/27

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B

-Continued-

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 7

Client: Arrowhead Contracting
Lab Number: 01040235

ICP Metals Total Preparation Analyst/Method	SKR	3050B
Mercury Total Preparation Analyst/Method	AMB	7471A
Antimony Total Preparation Analyst/Method	SKR	3050B

Conclusion of Lab Number: 01040235

Lab Number: 01040236
Sample Description: INC190612-L

Date Sampled: 03/23/2001
Time Sampled: 1450

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.3	mg/kg	04/13/2001	4866/26
Copper, Total	10.7	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	11.4	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	45.6	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040236

Lab Number: 01040237
Sample Description: INC060006-L

Date Sampled: 03/23/2001
Time Sampled: 1240

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.8	mg/kg	04/13/2001	4866/26
Copper, Total	33.8	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	67.8	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344

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CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 8

Client: Arrowhead Contracting
Lab Number: 01040237
Sample Description: INC060006-L

Analysis	Concentration	Units	Date Analyzed	Book/Page
Zinc, Total	245.	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040237

Lab Number: 01040238
Sample Description: INC240612-L

Date Sampled: 03/23/2001
Time Sampled: 1540

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	3.3	mg/kg	04/13/2001	4866/26
Copper, Total	9.8	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	10.9	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	43.8	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

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CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 9

Client: Arrowhead Contracting
Lab Number: 01040238

Analysis	Concentration	Units	Date Analyzed	Book/Page

Conclusion of Lab Number: 01040238

Lab Number: 01040239
Sample Description: INC010006-L

Date Sampled: 03/23/2001
Time Sampled: 1150

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	2.9	mg/kg	04/13/2001	4866/26
Copper, Total	20.0	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	11.2	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	74.0	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040239

Lab Number: 01040240
Sample Description: INC280006-L

Date Sampled: 03/23/2001
Time Sampled: 1620

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.0	mg/kg	04/13/2001	4866/26
Copper, Total	23.7	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	76.5	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	284.	mg/kg	04/13/2001	4866/26

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CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 10

Client: Arrowhead Contracting
Lab Number: 01040240
Sample Description: INC280006-L

Analysis	Concentration	Units	Date Analyzed	Book/Page

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040240

Lab Number: 01040241
Sample Description: INC070006-L

Date Sampled: 03/23/2001
Time Sampled: 1250

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	5.6	mg/kg	04/13/2001	4866/26
Copper, Total	27.5	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	110.	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	0.2	mg/kg	04/16/2001	4425/344
Zinc, Total	561.	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040241

-Continued-

CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 11

Client: Arrowhead Contracting

Lab Number: 01040242
Sample Description: INC141224-L

Date Sampled: 03/23/2001
Time Sampled: 1400

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	12.9	mg/kg	04/13/2001	4866/26
Copper, Total	28.7	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	62.5	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	301.	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040242

Lab Number: 01040243
Sample Description: INC030006-L

Date Sampled: 03/23/2001
Time Sampled: 1210

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	3.2	mg/kg	04/13/2001	4866/26
Copper, Total	21.5	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	33.8	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	0.1	mg/kg	04/16/2001	4425/344
Zinc, Total	144.	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B

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CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 12

Client: Arrowhead Contracting
Lab Number: 01040243

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040243

Lab Number: 01040244
Sample Description: INC080006-L

Date Sampled: 03/23/2001
Time Sampled: 1300

Analysis	Concentration	Units	Date Analyzed	Book/Page
Antimony, Total (ICP)	ND(2.0)	mg/kg	04/12/2001	4866/26
Arsenic, Total (ICP)	4.6	mg/kg	04/13/2001	4866/26
Copper, Total	16.0	mg/kg	04/13/2001	4866/26
Lead, Total (ICP)	68.7	mg/kg	04/13/2001	4866/26
Mercury, Total Soil	ND(0.1)	mg/kg	04/16/2001	4425/344
Zinc, Total	94.1	mg/kg	04/13/2001	4866/26

Analysis	Date Prepared	QC Batch	Analyst	Method(s)
Antimony, Total (ICP)	04/12/2001	010412-1	MAG	6010B
Arsenic, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Copper, Total	04/11/2001	010411-6	MAG	6010B
Lead, Total (ICP)	04/11/2001	010411-6	MAG	6010B
Mercury, Total Soil	04/13/2001	010413-2	AMB	7471A
Zinc, Total	04/11/2001	010411-6	MAG	6010B
ICP Metals Total Preparation Analyst/Method			SKR	3050B
Mercury Total Preparation Analyst/Method			AMB	7471A
Antimony Total Preparation Analyst/Method			SKR	3050B

Conclusion of Lab Number: 01040244

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CONTINENTAL ANALYTICAL SERVICES, INC.

LABORATORY REPORT Page: 13

Client: Arrowhead Contracting
Lab Number: 01040244

Analysis	Concentration	Units	Date Analyzed	Book/Page

Laboratory analyses were performed on samples utilizing procedures published in Title 40 of the Code of Federal Regulations, Parts 136 or 141, or in EPA Publication, SW-846, 3rd edition, September, 1986 and the latest promulgated update. ND(), where noted, indicates none detected with the reporting limit in parentheses. Samples will be retained for thirty days unless otherwise notified.

CONTINENTAL ANALYTICAL SERVICES, INC.

Clifford J. Baker
Technical Manager

Continental Analytical Services, Inc.

Chain-of-Custody Record

Continental Analytical Services, Inc.
1804 Glendale Rd. • Salina, KS 67401
(785) 827-1273 • (800) 535-3076 • FAX (785) 823-7830

PROJECT #	PROJECT NAME
01-224	Ft. Riley Soil Characterization

SAMPLED BY (SIGNATURE):	SAMPLED BY (PRINTED):
Scott Szymwald	Scott Szymwald

—SAMPLE INFORMATION— / **PARAMETERS**

DATE	TIME	C-COMP G-GRAB	FIELD FILTERED Y N	SAMPLE IDENTIFICATION	# OF CONTAINERS	Pb, Cr, Sb, Zn, As, Hg							REMARKS (REQUESTED TURNAROUND, PRESERVATIVE, ETC.)
3/23/01	1330	C	N	INC 110612-L	1	X							Standard Turnaround
3/23/01	1410	C	N	INC 150006-L	1	X							
3/23/01	1520	C	N	INC 220612-L	1	X							
3/23/01	1520	C	N	INC 220612-LD	1	X							
3/23/01	1320	C	N	INC 100006-L	1	X							
3/23/01	1320	C	N	INC 100006-LD	1	X							
3/23/01	1600	C	N	INC 260612-L	1	X							
3/23/01	1350	C	N	INC 130006-L	1	X							
3/23/01	1450	C	N	INC 190612-L	1	X							
3/23/01	1240	C	N	INC 060006-L	1	X							

RELINQUISHED BY (SIGNATURE):	RELINQUISHED BY (PRINTED):	DATE / TIME	RECEIVED BY (SIGNATURE):	RECEIVED BY (PRINTED):	DATE / TIME
Scott Szymwald		DATE: 4/3/01 TIME: 1700			DATE: TIME:
		DATE: TIME:			DATE: TIME:

RECEIVED AT LABORATORY BY (SIGNATURE/PRINTED): DATE: TIME:

SHIPPED VIA: Seal #:
Airbill #: Seal Date:

REPORT TO:
Attention: Scott Szymwald
Address:
Phone #:
FAX #: (913) [illegible]

INVOICE TO: Arrowhead Contracting
Attention: Tamya Dennington
Address: 12920 Metcalf Ave, Suite [illegible] Overland Park, KS 66213
Phone #: (913) [illegible]
Purchase Order No.:
CAS Price Quote No.: 150
FAX #: (913) 814-9997

Chain-of-Custody Record

Continental Analytical Services, Inc.
1804 Glendale Rd. • Salina, KS 67401
(785) 827-1273 • (800) 535-3076 • FAX (785) 823-7830

PROJECT #: 01-234

PROJECT NAME: Ft. Riley Soil Characterization

SAMPLED BY (SIGNATURE): [signature]

SAMPLED BY (PRINTED): Scott Fitzgerald

PARAMETERS: Pb, Cu, Sb, Zn, Mg

—SAMPLE INFORMATION—

DATE	TIME	C-COMP G-GRAB	FIELD FILTERED Y N	SAMPLE IDENTIFICATION	# OF CONTAINERS	Pb, Cu, Sb, Zn, Mg						REMARKS (REQUESTED TURNAROUND, PRESERVATIVE, ETC.)
3/23/01	1540	C	N	INC240612-L	1	X						Standard Turnaround
3/23/01	1150	C	N	INC010006-L	1	X						
3/23/01	1620	C	N	INC280006-L	1	X						
3/23/01	1250	C	N	INC070006-L	1	X						
3/23/01	1400	C	N	INC141224-L	1	X						
3/23/01	1210	C	N	INC030006-L	1	X						
3/23/01	1300	C	N	INC050006-L	1	X						
3/23/01	1300	C	N	INC080006-MS/MSD	1	[illegible]						Provided for Lab QA

RELINQUISHED BY (SIGNATURE): [signature] RELINQUISHED BY (PRINTED): DATE: 4/3/01 TIME: 1700

RECEIVED BY (SIGNATURE): RECEIVED BY (PRINTED): DATE: TIME:

RELINQUISHED BY (SIGNATURE): RELINQUISHED BY (PRINTED): DATE: TIME:

RECEIVED BY (SIGNATURE): RECEIVED BY (PRINTED): DATE: TIME:

RECEIVED AT LABORATORY BY (SIGNATURE/PRINTED): DATE: TIME:

SHIPPED VIA: Seal #:
Airbill #: Seal Date:

REPORT TO:
Attention: See page 1 of 2
Address:
Phone #: FAX #:

INVOICE TO:
Attention:
Address: See page 1 of 2
Phone #:
Purchase Order No.:
CAS Price Quote No.:
FAX #:

APPENDIX B

SAMPLE COLLECTION FIELD SHEETS

SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: Inc-01 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/ Time: 1150	Sampling Personnel: Andy Arnold Brad Boyer Site Manager: SFS
Sample Matrix: Soil · ✓ Sample Method: Soil probe	Composite? Y
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

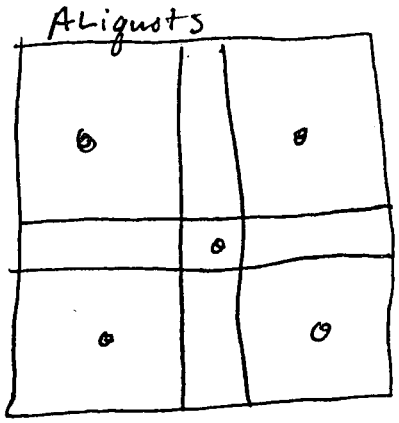
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

Inc-01-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold Bob Boyer
Location: InC-02	
Start Depth: 0 ft. Finish Depth: 2 ft.	
Sample Date: 03/23/ Time: 1200	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

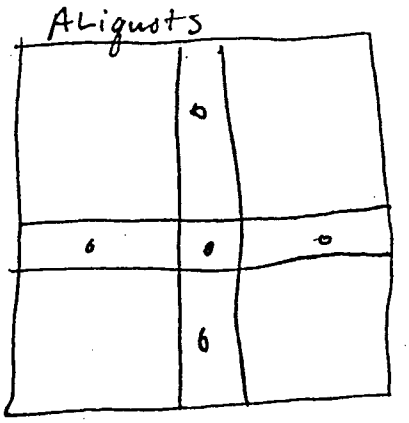
Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected
InC-020006
InC-02-0612
InC-02-1224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC-03 Start Depth: 0 ft Finish Depth: 6" ft Sample Date: 03/23/ Time: 1210	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

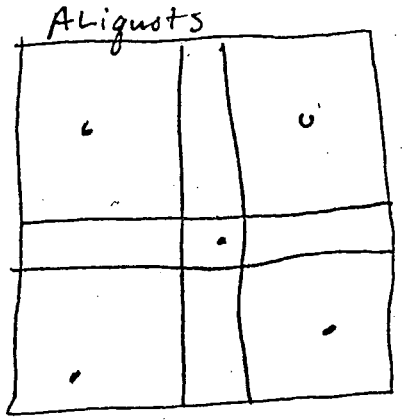
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-03-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: InC-04 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/____ Time: ____	Sampling Personnel: Andy Arnold, Beth Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

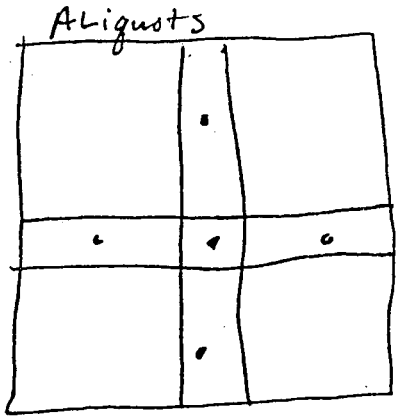
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC - 04 - 0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC-05 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1230	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

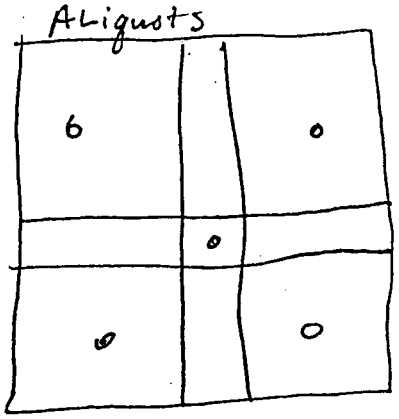
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-05-0006

INC-05-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Brad Boyer
Location: InC-06	
Start Depth: 0 ft. Finish Depth: 6" ft.	
Sample Date: 03/23/ Time: 1240	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

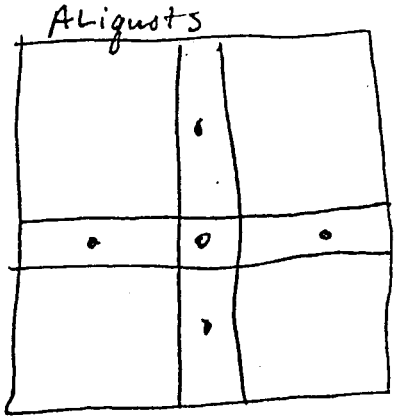
Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected
InC-06- 0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC-07 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/ Time: 1250	Sampling Personnel: Andy Arnold Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

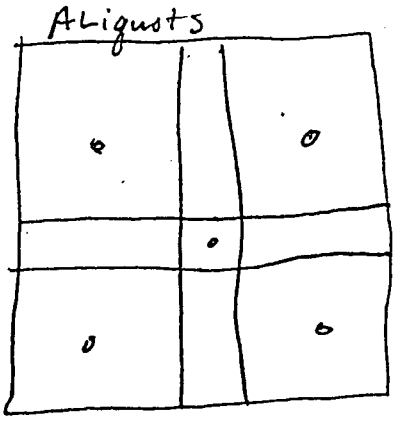
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-07-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: Inc - 08 Start Depth: 0 ft. Finish Depth: 2 ft. Sample Date: 03/23/ Time: 1300	Sampling Personnel: Andy Arnold, Brett Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

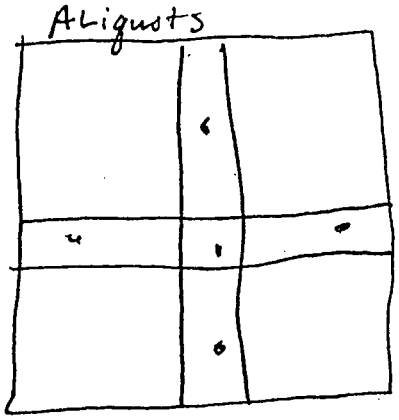
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

Inc- 08-0006
Inc-08-0612
Inc-08 1224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: InC - 09 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/ Time: 1310	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

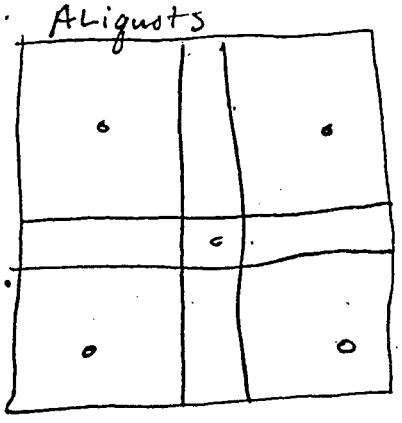
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC - 09 - 0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: 1 Type: SO	Sampling Personnel: Andy Arnold, Brad Boyer
Location: InC-1D	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1320	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

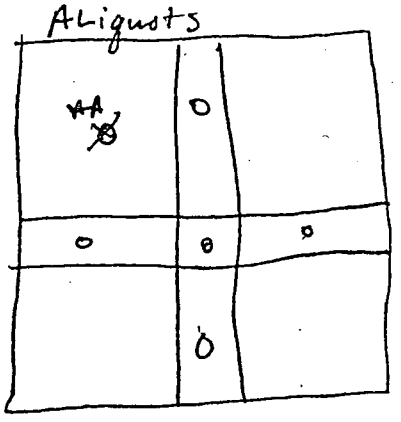
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC-10-0006

InC-10-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: InC - 11 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1330	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

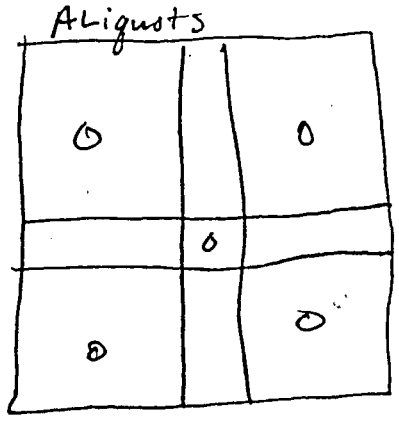
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC-C1-0006

InC-11-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold Bob Boyer
Location: INC 12	
Start Depth: 0 ft. Finish Depth: 6" ft.	
Sample Date: 03/23/01 Time: 1340	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P. CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

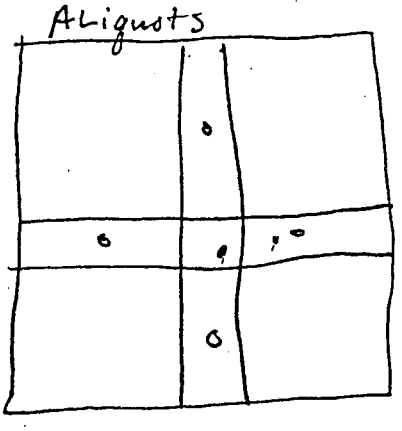
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-12-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: Inc-13 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1350	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

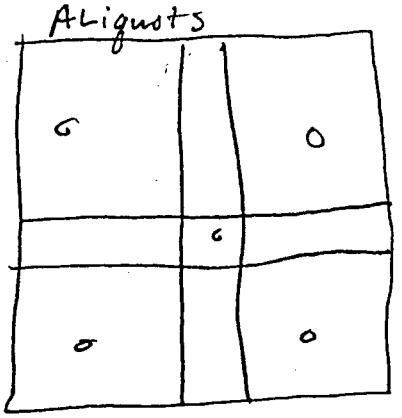
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

Inc-13-0006

Inc-13-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bob Boyer
Location: INC-14	
Start Depth: 0 ft. Finish Depth: 2 ft.	
Sample Date: 03/23/ Time: 1400	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

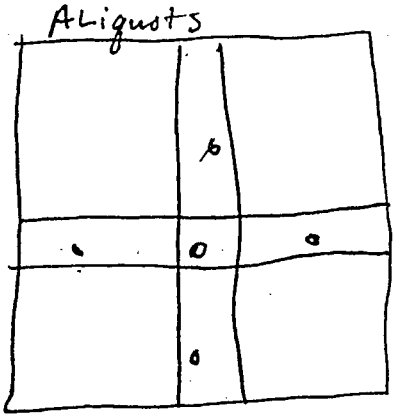
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-14-0006
INC-14-0612
INC-1224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: InC - 15 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/ Time: 1410	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

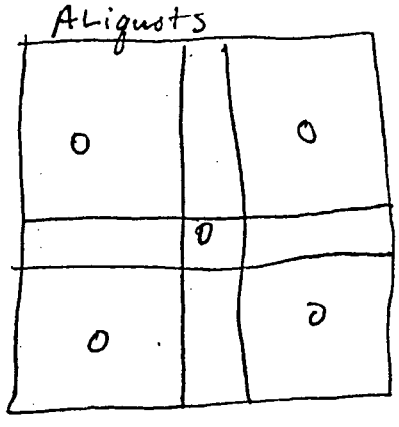
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC-14-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION

PROJECT NAME : FT. RILEY

Site: InC

ARROWHEAD Project Number: 01-224

Sample No.: Type: SO

Sampling Personnel: Andy Arnold, Brad Boyer

Location: INC-16

Start Depth: 0 ft. Finish Depth: 1 ft.

Sample Date: 03/23/ Time: 1420

Site Manager: SFS

Sample Matrix: Soil ✓ Sample Method: Soil probe Composite? Y

Weather CLR P. CLDY CLDY FOG

Temp 55 °F Wind Calm Mod High

Precip Rain Lite Mod High

Snow Lite Mod High

Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

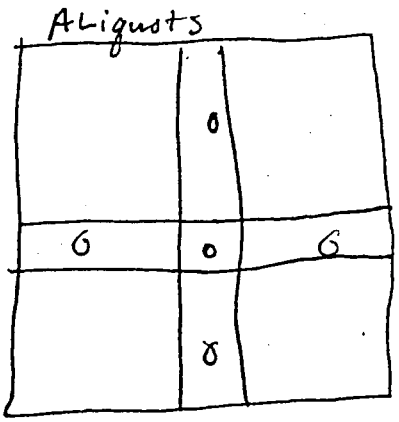
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-16-0006

INC-16-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bill Boyer
Location: INC -17	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1430	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

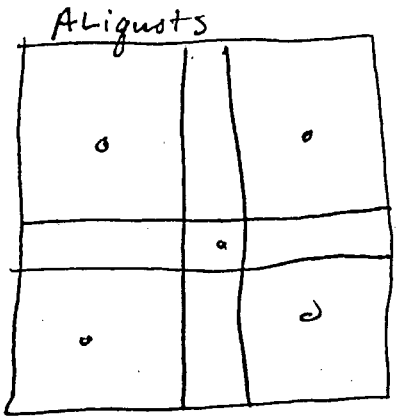
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-17-0006

INC-17-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Brad Boyer
Location: InC-18	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1440	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

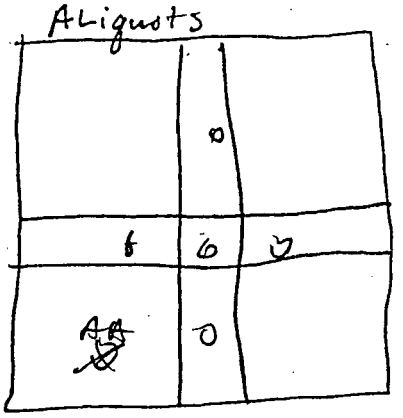
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

InC-18-0006

InC-18-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold Bob Boyer
Location: INC-19	
Start Depth: 0 ft. Finish Depth: 2 ft.	
Sample Date: 03/23/ Time: 1450	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

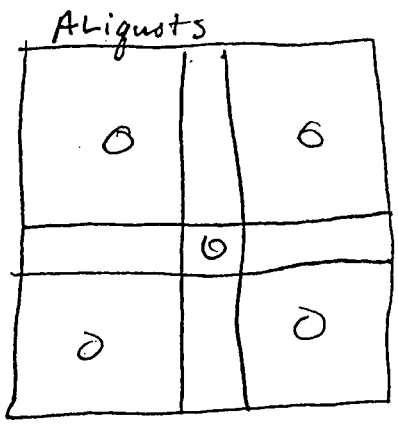
Notes/Sketch Map:

Samples Collected

INC-19-0006

INC-19-0612

INC-19-1224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bob Boyer
Location: INC-20	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1500	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

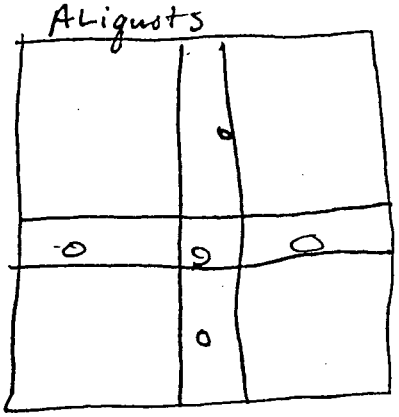
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

Inc-20-0006

Inc-20-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bob Boyer
Location: InC -21	
Start Depth: 0 ft. Finish Depth: 2 ft.	
Sample Date: 03/23/ Time: 1570	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

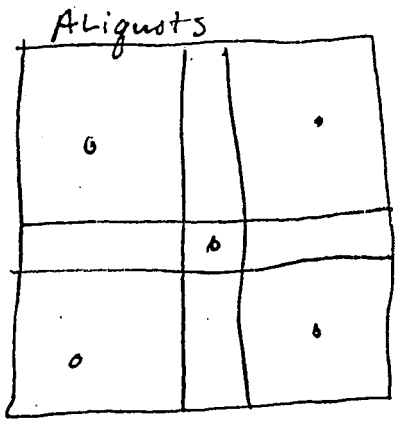
Notes/Sketch Map:

Samples Collected

InC-21-0006

InC-21-0662

InC-21-1224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC-22 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1520	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

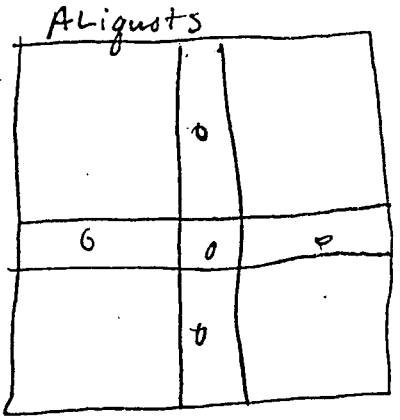
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-22-0006

INC-22-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Brad Boyer
Location: INC-23	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1530	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P.CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

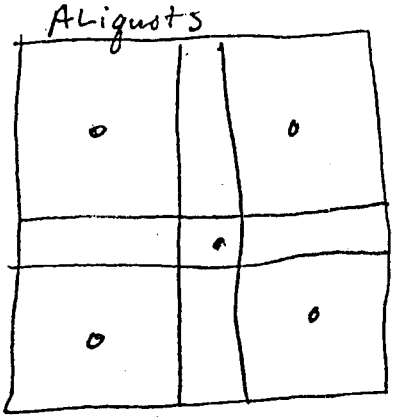
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-23-0006

INC-23-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC 24 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1540	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

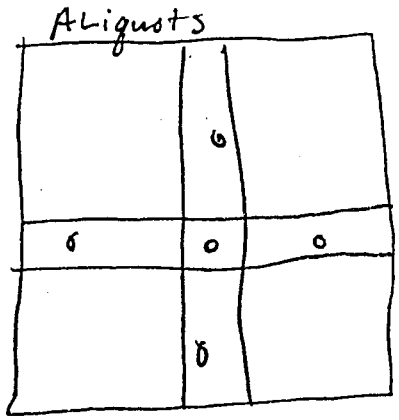
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-24-0006

INC-24-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bob Boyer
Location: InC-25	
Start Depth: 0 ft. Finish Depth: 2 ft.	
Sample Date: 03/23/ Time: 1550	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P. CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

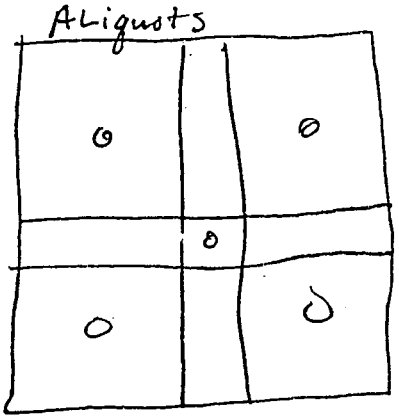
Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected
InC-25-0006
InC-25-0612
InC-24-0224



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: INC-26 Start Depth: 0 ft. Finish Depth: 1 ft. Sample Date: 03/23/ Time: 1600	Sampling Personnel: Andy Arnold, Matt Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: Soil probe Composite? Y	
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

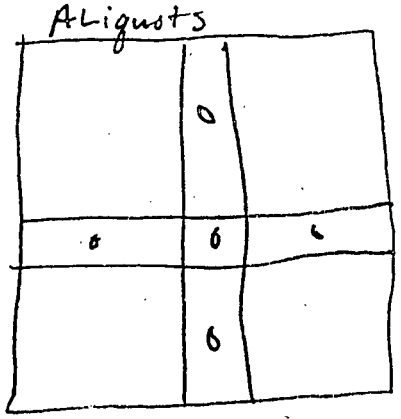
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-26-0006

INC-26-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: _____ Type: SO Location: INC-27 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/____ Time: 1610	Sampling Personnel: Andy Arnold, Brad Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y	
Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziplex Bags (quarts) size				

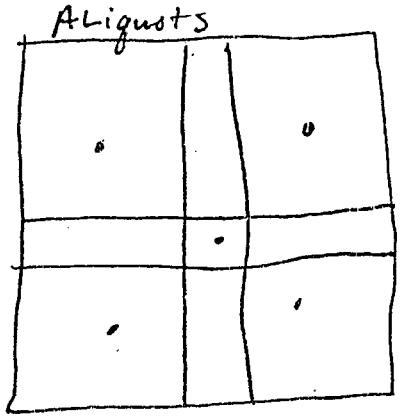
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-27 0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: _____ Type: SO Location: INC-28 Start Depth: 0 ft. Finish Depth: 6" ft. Sample Date: 03/23/____ Time: 1620	Sampling Personnel: Andy Arnold, Bob Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe Composite? Y Weather CLR P. CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

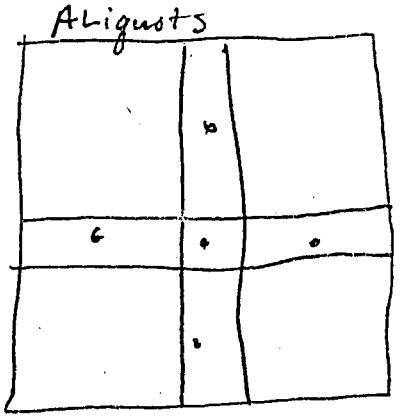
QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-28-0006



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION Site: InC	PROJECT NAME : FT. RILEY ARROWHEAD Project Number: 01-224
Sample No.: Type: SO Location: Inc29 AA Start Depth: 0" ft. Finish Depth: 0.1 ft. Sample Date: 03/23/01 Time: 1630	Sampling Personnel: Andy Arnold, Brett Boyer Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: Soil probe Composite? Y	
Weather CLR P.CLDY CLDY FOG Temp 55 °F Wind Calm Mod High Precip Rain Lite Mod High Snow Lite Mod High Location Description:	

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags (quarts) size				

QA/QC Information

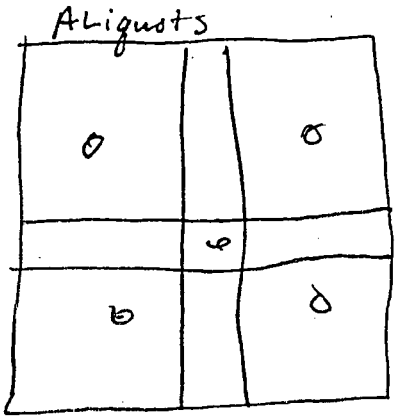
Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

INC-29-0006

INC-29-0612



SOIL SAMPLE COLLECTION FIELD SHEET

Project: SOIL CHARACTERIZATION	PROJECT NAME : FT. RILEY
Site: InC	ARROWHEAD Project Number: 01-224
Sample No.: Type: SO	Sampling Personnel: Andy Arnold, Bob Boyer
Location: Inc -30	
Start Depth: 0 ft. Finish Depth: 1 ft.	
Sample Date: 03/23/ Time: 1640	Site Manager: SFS
Sample Matrix: Soil ✓ Sample Method: soil probe	Composite? Y

Weather CLR P. CLDY CLDY FOG
Temp 55 °F Wind Calm Mod High
Precip Rain Lite Mod High
Snow Lite Mod High
Location Description:

Soil Description:

Depth:	Description:

Sampling Information:

Sample Container	Preservative	Analysis Required	Method Number	Laboratory
Ziploc Bags				
(quarts) size				

QA/QC Information

Type	Sample Number	Container	Preservative	Analysis Required	Method Number	Laboratory

Notes/Sketch Map:

Samples Collected

Inc-30-0006

Inc-30-0612