RCRA FACILITY INVESTIGATION DRAFT FINAL REPORT

FOR

FH-051, X-Ray Solution in Ground (Building 4405) FORT HOOD, TEXAS

PREPARED FOR

U.S. ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT

CONTRACT NO. DACA63-96-D-0021

OCTOBER 1998

Science Applications International Corporation
An Employee-Owned Company

RCRA Facility Investigation Report
For
SWMU FH-051
X-Ray Solution in Ground (Building 4405)
Fort Hood, Texas

DRAFT FINAL

Prepared for
U.S. Army Corps of Engineers
Fort Worth District
Fort Worth, Texas

Under Contract Number
DACA63-96-D-0021

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October 1998

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ACRONYMS

AA	Atomic Absorption
BEGM	Bureau of Economic Geology
BG	background
BGS	below ground surface
CQAR	Chemical Quality Assessment Report
DOT	Department of Transportation
DPW	Directorate of Public Works
EM	Electromagnetometer
FH	Fort Hood
ft	feet or foot
GC/MS	Gas Chromatography/Mass Spectrometry
ICP	Inductively Coupled Plasma
IDW	Investigation Derived Waste
LCS	Laboratory Control Samples
MSC	medium specific concentration
msl	mean sea level
MS/MSDs	Matrix Spike/Matrix Spike Duplicate
ppb	parts per billion
ppm	parts per million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RRSs	Risk Reduction Standards
SAIC	Science Applications International Corporation
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TNRCC	Texas Natural Resources Conservation Commission
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit

1.0 INTRODUCTION

Fort Hood is an active U.S. Army installation occupying 217,551 acres (339 square miles) in southern Coryell and Bell Counties in central Texas. It is situated 60 miles north of Austin, and about 50 miles south of Waco. The installation is located north of and adjacent to the city of Killeen, east of and adjacent to the city of Copperas Cove, and four miles south of the city of Gatesville. A vicinity map is shown in Figure 1.1.

Fort Hood began operations in 1942. Robert Gray Air Field, originally operated by the Air Force as Robert Gray Air Force Base, was established in 1947 (U. S. Army 1996a). Fort Hood's mission is training, testing, and deployment of military personnel and equipment. The post is commanded by the III Corps Commander. Currently, the post supports two full armored divisions (the 1st Cavalry and 4th Infantry Divisions). Forty-three thousand military personnel are stationed there; and an additional 30,000 family members, civilians, volunteers, and private-sector employees also live or work at Fort Hood (U.S. Army 1996b). Among the military assets of Fort Hood are approximately 2,500 tracked vehicles, over 11,000 wheeled vehicles, six fixed wing aircraft, and 230 rotary-wing aircraft. The post has 67 active firing and demolition ranges.

The Fort Hood military reservation is regulated under the Resource Conservation and Recovery Act (RCRA) as a hazardous waste management facility. Fort Hood has a RCRA permit to operate three hazardous waste storage units. The RCRA permit requires that Fort Hood perform a RCRA Facility Investigation (RFI) for 40 solid waste management units (SWMUs) listed in the permit. These SWMUs are distributed across the military reservation, in the main cantonment, West Fort Hood, and North Fort Hood. They include former solid waste landfills and burial sites, former and inactive underground storage tank locations, active wash rack/sewer systems, effluent ponds, and a sanitary sewer network. An installation map is shown in Figure 1.2.

This report describes the collection and analysis of data from SWMU FH-051, a location outside Building 4405 where spent x-ray solution was reportedly disposed of on the ground. It is one of 35 SWMUs investigated during the RFI conducted November 1996 through September 1997. FH-051 is located on the main cantonment adjacent to Building 4405, south of Warehouse Road, and west of South 65th Street.

1.1 BACKGROUND

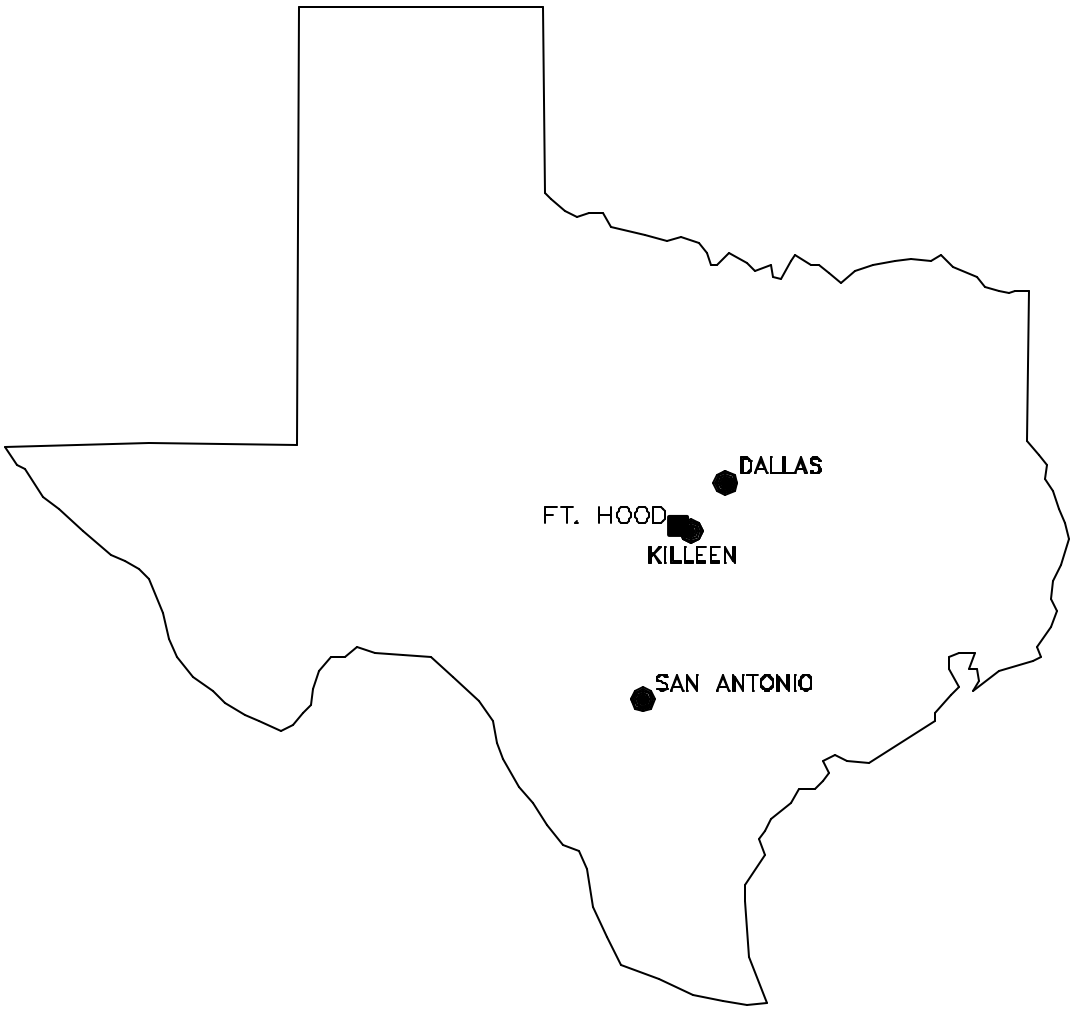
FH-051 is located adjacent to the north door of Building 4405. During the 1970's, x-ray facilities were housed in Building 4405. During this time, base personnel were reported to have disposed of spent x-ray solution by dumping small quantities (hand held trays) on the ground outside the north door of the building (USACE, 1995).

1.2 SCOPE AND OBJECTIVES

The objective of the RFI at FH-051 was to determine if past disposal practices at Building 4405 have caused silver contamination in the soils outside Building 4405 and, if contamination is present at the site, to characterize the extent of contamination. This report assesses the presence and extent of silver contamination at the site and evaluates what, if any, additional investigation is needed.

The specific objectives of the investigation of FH-051 were as follows:

- determine the presence or absence of silver in the surface and subsurface soils at the north end of Building 4405;
- characterize the migration potential of any silver contamination identified in the surface and subsurface soils;



U.S. ARMY
FORT HOOD, TEXAS

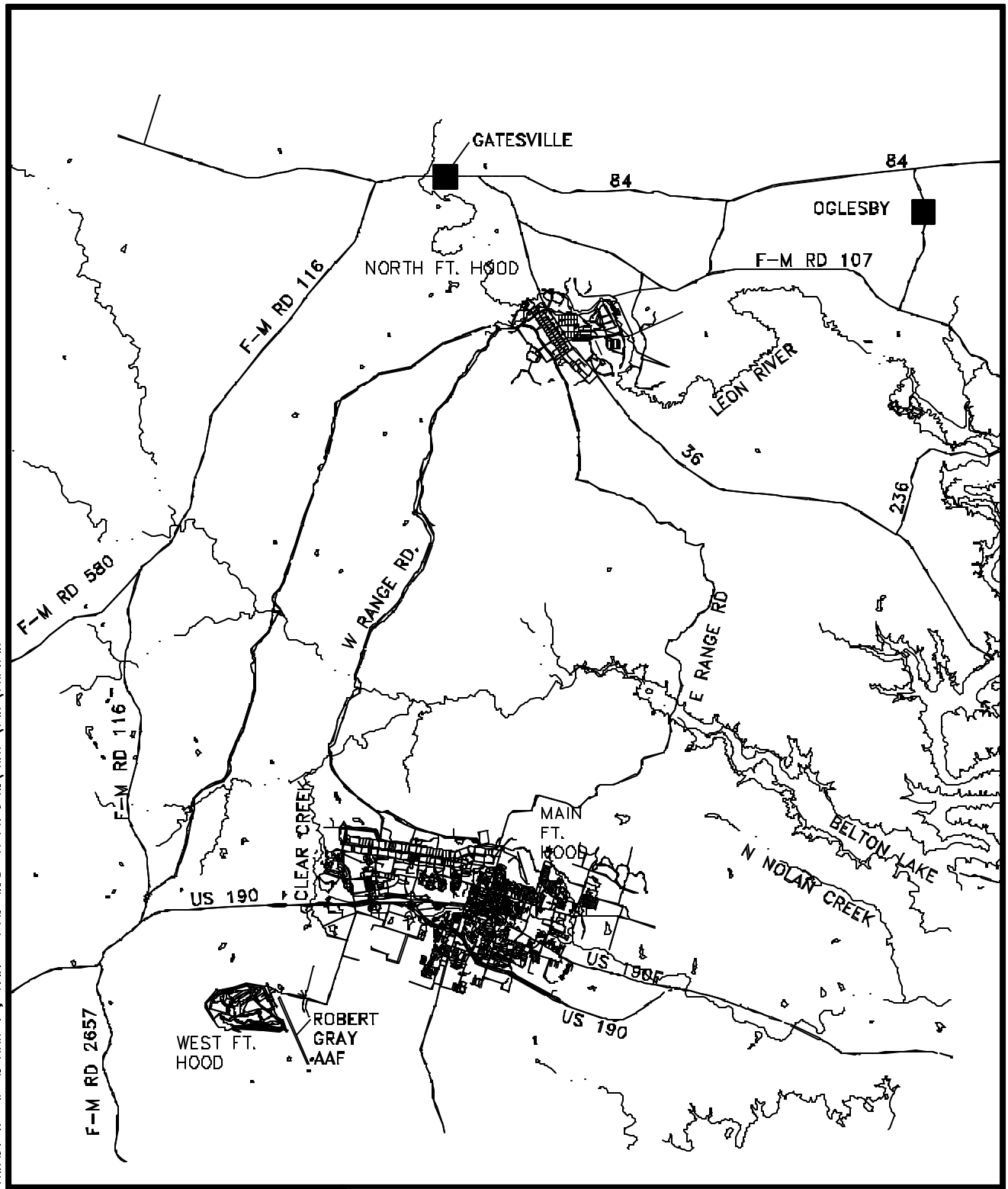
RCRA FACILITY INVESTIGATION

FORT HOOD
VICINITY MAP

Science Applications International Corporation — Columbus, Ohio

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	FIGURE NO.
SC			NO SCALE		1.1

NAME: S:\HOOD\FHLOCAT.DWG DATE: APR 19, 1999 TIME: 12:51 PM PCP: S:\HOOD\PCP\FRP.PCP



LEGEND

MAJOR ROADS

RIVERS/STREAMS

WATER BODIES

U.S. ARMY
FORT HOOD, TEXAS

RCRA FACILITY INVESTIGATION

FT. HOOD INSTALLATION MAP

Science Applications International Corporation — Columbus, Ohio

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	FIGURE NO.
			1"=7000M		1.2

NAME: S:\HOOD\RFIFACIL.DWG DATE: MAR 01, 1999 TIME: 2:58 PM PCP: S:\HOOD\PCP\FRP.PCP

- obtain information on the physical properties of the soil at the site;
- evaluate the potential human health risks associated with contaminants detected in surface and subsurface soils; and
- determine what, if any, corrective measures are needed to address silver contamination associated with SWMU FH-051.

The approach to the RFI included field sampling and laboratory analysis of surface and subsurface soils. The sampling and analysis program was conducted in accordance with the Final RCRA Facility Investigation Work Plan for Fort Hood Site FH-051 (USACE 1995).

2.0 ENVIRONMENTAL SETTING

The material presented in this section describes the physical characteristics of FH-051 and its surroundings. The geology, physiography, and climate are presented using regional and site-specific data where available.

2.1 PHYSIOGRAPHIC SETTING

Fort Hood is located within the eastern edge of the Lampasas Cut Plains region of the North-Central Plains physiographic province. The topography of Fort Hood consists of small stream valleys separated by ridge-forming mesas. Relief is as great as 340 ft. The Black and Blackwell Mountains are prominent features north of the main cantonment, as are Seven Mile Mountain at West Fort Hood, and the Dalton Mountains southwest of North Fort Hood. A topographic map of the main cantonment of Fort Hood is provided in Figure 2.1.

Local relief on the main cantonment and at West Fort Hood is generally less than 100 ft, with flat to gently rolling topography. Elevations on the main cantonment range from 860 to 940 ft above mean sea level (msl). SWMU FH-051's elevation is approximately 920 ft above msl.

The rivers, streams, and creeks that constitute the main surface water pathways at Fort Hood are shown on Figure 1.2. The main cantonment lies along a watershed divide between Belton Lake and the Leon River, downstream from the lake. The western and north-central parts of the main cantonment are drained by Clear Creek, which discharges to House Creek. House Creek is a tributary to the eastward-flowing Cowhouse Creek, which discharges to Belton Lake, a man-made reservoir. South Nolan Creek and North Nolan Creek both originate on Fort Hood and flow eastward to the Leon River, below Belton Lake.

2.2 GEOLOGIC CONDITIONS

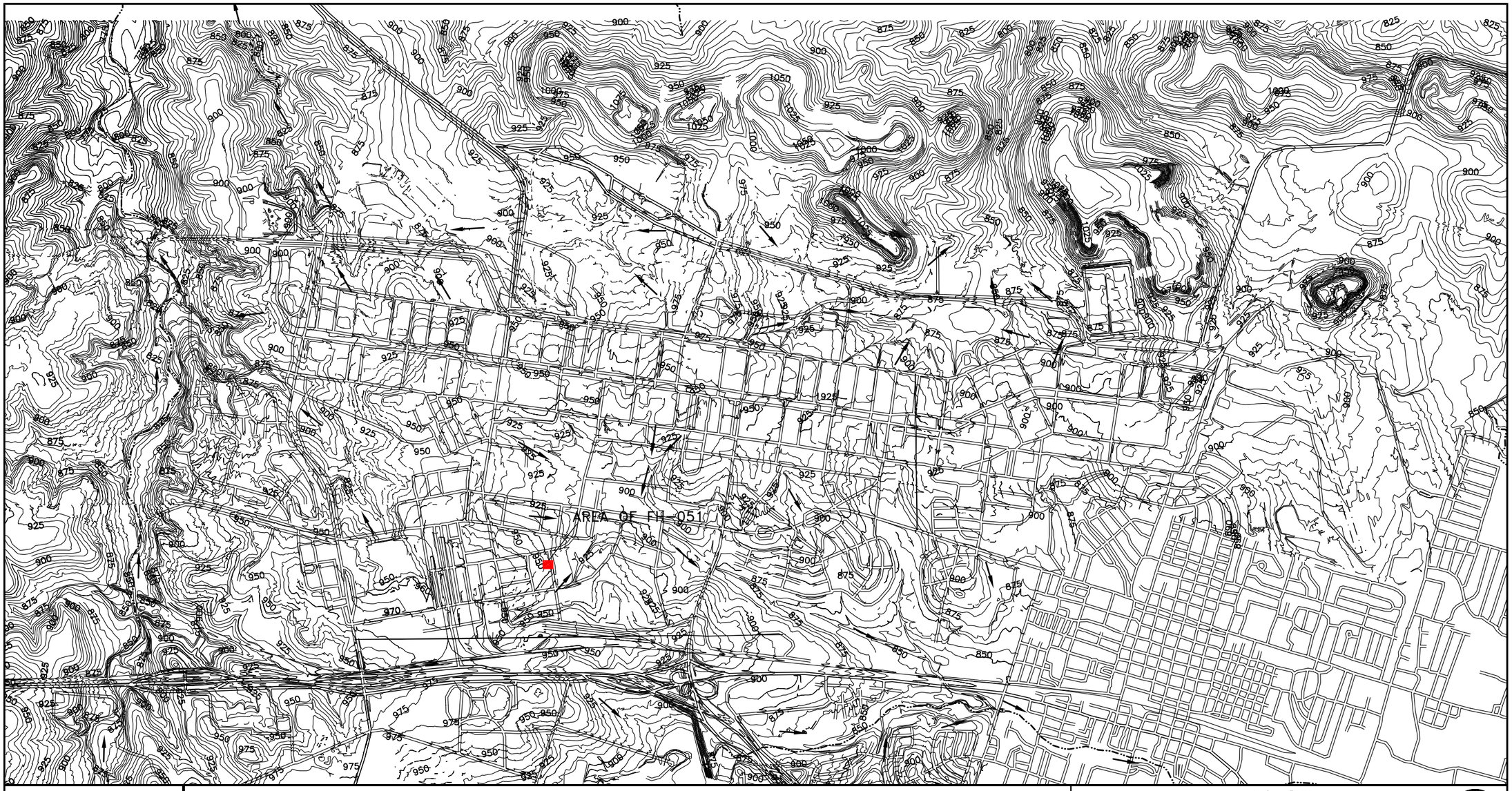
A summary of the geology of the Fort Hood area relevant to this RFI is adapted from the Final RCRA Facility Investigation Work Plan, 35 Solid Waste Management Units, Fort Hood, Texas (USACE 1995). Relevant information on the occurrences of soils and bedrock has been incorporated to further characterize the geology of FH-051and its surroundings.

2.2.1 Bedrock

Lower Cretaceous marine sedimentary rocks make up the stratigraphy underlying Fort Hood. The Fredericksburg Group consists of several stratigraphic units. The Walnut Formation is the lowermost unit of the Fredericksburg Group and is the dominant stratigraphic unit in the main cantonment. It consists of shales with interbedded limestone, chalky nodular limestone, and shell aggregates. The fossiliferous Walnut Formation is exposed in many locations at Fort Hood. It varies in thickness from 100 to 150 ft (BEGM 1979). The Comanche Peak Formation and an undifferentiated unit overlie the Walnut Formation, but are present at the surface only north of the main cantonment in the Black and Blackwell Mountains, and on West Fort Hood on Seven Mile Mountain. Bedrock dips gently to the southeast throughout the area. Inactive faults are present in the subsurface to the east of Fort Hood along the Balcones Fault Zone, which runs through Bell, McLennan, and Hill Counties.

2.2.2 Unconsolidated Materials

Alluvial deposits of Quaternary age are present along stream valleys on the main cantonment, specifically along South Nolan Creek on the southern edge of the cantonment (USACE 1995). It is suspected that much alluvium and other natural surface deposits have been reworked throughout the active life of Fort Hood during construction projects.



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N
True North

400 0 400 800
METERS

LEGEND

TOPOGRAPHIC CONTOUR (FT.)
DRAINAGE
SURFACE DRAINAGE FLOW
AREA OF FH-051

U.S. ARMY
FORT HOOD, TEXAS

RCRA FACILITY INVESTIGATION

TOPOGRAPHY OF MAIN CANTONMENT

SAIC Science Applications International Corporation Columbus, Ohio

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	FIGURE NO.
SC			AS SHOWN		2.1

2.3 CHARACTERIZATION OF SOILS

In many areas of the main cantonment, silty or sandy clay soils overlie bedrock. In upland areas, these soils contain abundant rock fragments. In general, these soils have low permeabilities (USDA 1985a,b). They range in thickness from 15 to 20 ft. Because soils have been extensively reworked for construction and landfilling in the SWMUs that were investigated, it is difficult to apply the USDA classification to the soils encountered on the main cantonment.

2.4 CHARACTERIZATION OF CLIMATE

The climate of the Fort Hood-Killeen area can be characterized as semi-arid continental. Winters (December-March) are mild, with the average daily maximum temperature in January (the coldest month) reaching 60° F. Below-freezing temperatures occur on an average of 23 days per year. The normal daily winter temperature range is 42 to 62° F. At times, strong northerly winds accompanied by sharp drops in temperature occur during the winter months. Summers (June-September) are hot and dry. The average daily maximum temperature in August, the hottest month, reaches 95.9^{o} F. The normal daily temperature range for summer is 75 to 95° F. The average daily temperature in Killeen is 68.1^{o} F.

Average annual rainfall in the Killeen area is 30.4 inches, and is most concentrated from September to May (U.S. Army 1996). Snowfall is rare. The average annual humidity in the region is 55 percent. Total rainfall for 1996 at Fort Hood was 26.7 inches. The ten months prior to the start of the field program for this RFI were anomalously dry. During the ten-month period in which the field program of the RFI was conducted, precipitation was higher than the historical monthly averages. Severe weather in the form of heavy rain, hail storms, and ice storms is common in the winter months.

3.0 UNIT CHARACTERIZATION

Site FH-051 is located adjacent to the north door of Building 4405 in the main cantonment. For an unknown period of time ending in the 1970's, base personnel were reported to have disposed of hand held trays of x-ray solution outside the north door of the building. The frequency and duration of such discharges, and total volume of solution that was disposed at this location are not known. A portion of the site is currently covered with asphalt and used as a parking lot. Figure 3.1 is a photograph of FH-051 taken for Fort Hood's September 1996 Installation Action Plan submittal. Five soil samples were collected by Fort Hood in 1986 (prior to construction of the asphalt pavement) and analyzed for silver. Analytical results indicated that silver was not present above the analytical detection limit of 0.05 mg/kg (USACE, 1995). No further historical or operational information about this site was discovered during a site visit conducted in April 1995.

Figure 3.1 Photograph of FH-051

4.0 CHARACTERIZATION OF UNIT CONTAMINATION

The RFI field program was designed to do the following at SWMU FH-051:

- determine the presence or absence of silver in the surface and subsurface soils at the north end of Building 4405;
- characterize the migration potential of any silver contamination identified in the surface and subsurface soils;
- obtain information on the physical properties of the soil at the site;
- evaluate the potential human health risks associated with any silver detected in surface and subsurface soils; and
- determine what, if any, corrective measures are needed to address contamination associated with SWMU FH-051.

4.1 TECHNICAL APPROACH

Both surface (0-2ft BGS) and subsurface soils (> 2ft. BGS) were sampled at FH-051. The different soil depths were sampled in order to provide data necessary to better characterize the potential contamination present in different soil strata and to evaluate the potential human health risks associated with contaminants at the site. The concentration of silver in soils will vary based on depth due to the chemical nature of the contaminant, and the extent of migration. Concentrations at the surface of the soil may differ greatly from subsurface levels. In addition, analysis of different soil levels is necessary in order to accurately evaluate the human health risks associated with the contaminants. Exposures based on surface, or direct, contact will differ from exposure, if any, associated with silver in deeper soils. Combining surface and subsurface data may result in a database that is not truly representative of actual exposure at the site. However, at FH-051, direct contact with surface soils is not likely due to the presence of the asphalt pavement over much of the site.

Initially, a total of 14 soil borings were drilled and sampled in January and September of 1997. Locations of the sampling points are shown in Figure 4.1. All soil borings were drilled using a truck-mounted hollow-stem auger rig. Soil borings SB101 through SB105 were drilled and sampled in January 1997. Soil borings SB106 through SB115 were drilled and sampled in September 1997. Borings SB106 through SB110 were drilled through asphalt paving. Therefore, samples taken directly under the asphalt and underlying aggregate (approximately 3 inches of asphalt and 3 inches of aggregate) are considered shallow soils. These soils were collected at a depth necessary to characterize the shallow soils and avoid being part of the asphalt placement material. Soil borings were located in areas expected to be within a typical “throw” distance from the north building door. Samples were taken at 0-1 ft below ground surface (BGS) and at 9.5-10 ft BGS at borings SB101 through SB104. Samples were collected at 0-1 ft and 9-9.5 ft at SB105. Samples were collected at 1-2 ft and 8-9.5 ft (below asphalt paving) at SB106 and at 0.5-2 ft and 8-9.5 ft (below asphalt paving) at SB107, SB108, SB109 and SB110. Samples were collected at 0-2 ft BGS, and 7-8 ft BGS in SB111. Samples were taken at 0-2 ft and 6-7.5 ft at SB112; 0-2 ft and 6-6.3 ft at SB113; 0-2 ft and 3.5-4 ft at SB114 and at 0-2 ft and 6-7.3 ft at SB114. Boring logs for FH-051 are provided in Appendix A.

All samples were analyzed for silver. Downhole, breathing zone, and headspace organic vapors were monitored during sampling activities and all measured 0 ppm except for headspace at SB101 that measured 2.5 ppm. Soil sampling and handling, sample handling, chain-of-custody, and other field activities were conducted in accordance with the RCRA Facility Investigation Work Plan for 35 SWMUs (USACE 1995).

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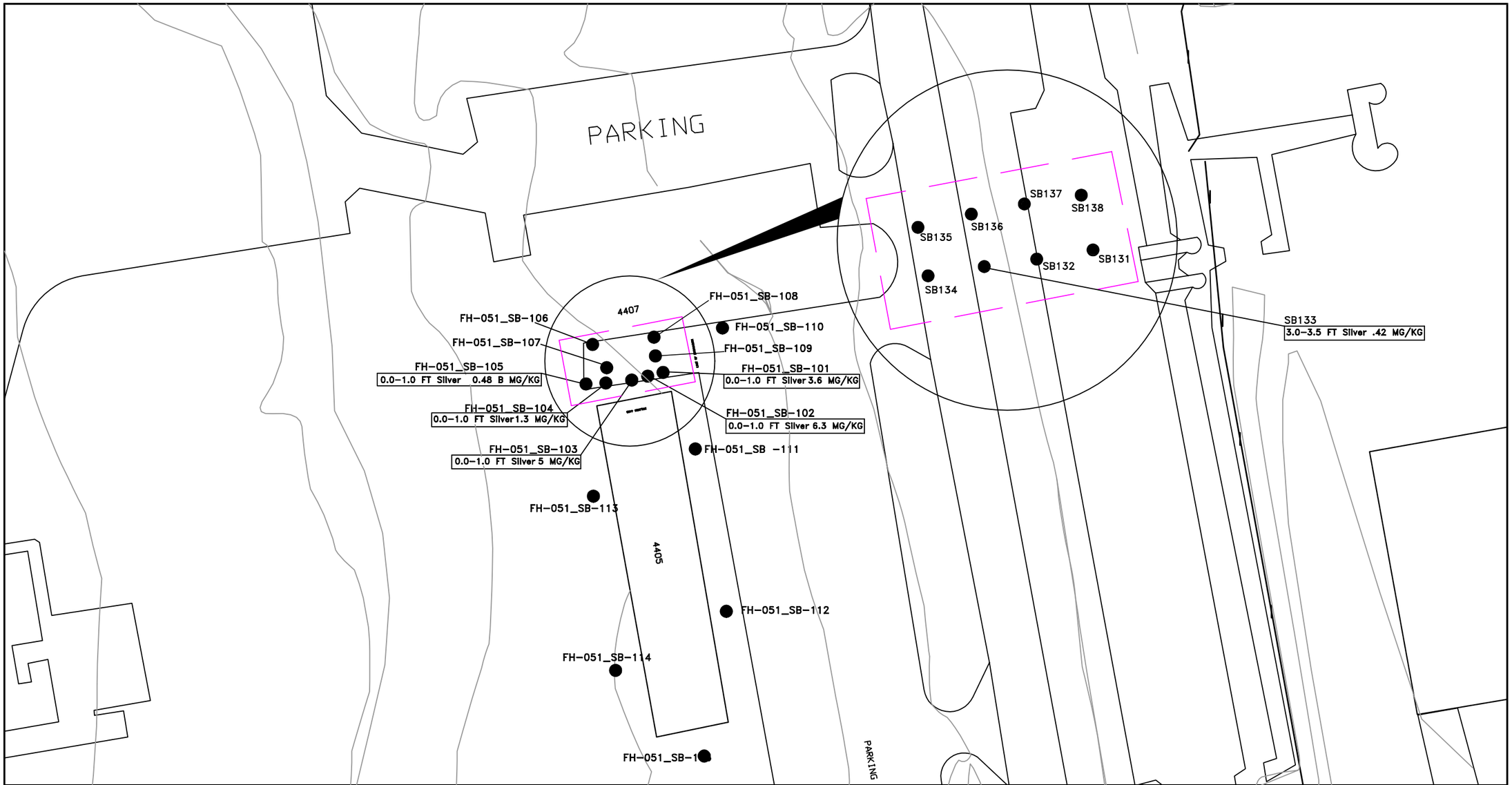
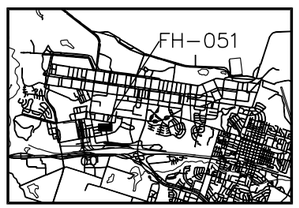




MAIN FT. HOOD LOCATION MAP

N
True North

6 0 6 12
METERS

LEGEND

TOPGRAPHIC CONTOUR (FT.)

SAMPLING LOCATION

U.S. ARMY
FORT HOOD, TEXAS

RCRA FACILITY INVESTIGATION

SAMPLING LOCATIONS AND SILVER DETECTS ABOVE PQLs AT FH-051

SAIC Science Applications International Corporation Columbus, Ohio

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	FIGURE NO.
SC			AS SHOWN		4.1

All boreholes except borings SB101, SB102 and SB103 were initially dry at the completion of drilling. A thin moist sand seam was identified at approximately 4 feet below grade at SB101 and a dry sand seam was identified at approximately 5 feet below grade in SB102. A sand seam was not specifically identified in SB103, however, sand was encountered in the soil matrix from 4 to 6 feet below grade. There were no moist sand seams identified in any of the other soil borings at FH-051. Within 24 hours of completion of the soil borings, water was only found in SB101 (6 ft BGS), SB102 (6.1 ft BGS) and SB103 (6 ft BGS). The thin sand seam appears to be a saturated perched zone that was only identified in SB101, SB102 and SB103. The groundwater that was identified in the soil borings was sampled and analyzed for silver in accordance with the RCRA Facility Investigation Work Plan for 35 SWMUs (USACE 1995).

Based on the findings of these initial soil samples, the USACE excavated an area 50 feet by 20 feet by 3 feet of soil from outside of the north building door in late June 1998. After excavation, 8 confirmatory soil samples were taken on July 16, 1998, three to six inches below the bottom of the excavation pit that was created at FH-051, and analyzed for silver.

4.2 UNIT INVESTIGATION AND ANALYTICAL RESULTS

Analytical results for soils at SWMU FH-051 are provided in their entirety in Appendix B. Table 4.1 summarizes those constituents detected above practical quantitation limits (PQLs). Silver was detected above the PQL in surface soils collected from 0-1ft at SB101 (3.6 ppm), SB102 (6.3 ppm), SB103 (5 ppm), SB104 (1.3 ppm), and SB105 (0.48 ppm). Silver was not detected above the PQL in any of the other surface soil samples which were collected from 0-2 ft.

Silver was not detected in any of the initial subsurface soils at concentrations above the PQL collected in January and September 1997. However, silver was detected in confirmatory soil sample SB133 (0.42 ppm) that was collected at a depth of 3 to 6 inches below the excavation pit bottom at a depth of 3-3.5 feet.

Silver was not detected above the PQL (1.2 ppb) in any of the three groundwater samples taken at FH-051.

4.3 DISPOSITION OF INVESTIGATION DERIVED WASTE (IDW)

All IDW generated during drilling at FH-051 was stored in 55 gallon drums. All drums were clearly identified with Department of Transportation (DOT) - approved labels containing the drum's contents, the date it was filled, and the SWMU where the IDW was generated. Drums were staged in the SAIC compound pending disposition. Analytical results from the corresponding soil samples were used to determine whether a drum's contents were hazardous or non-hazardous. Contaminant levels were screened against the Resource Conservation and Recovery Act (RCRA) "20 times" rule for the Toxicity Characteristic Leaching Procedure (TCLP). Provisions were made for TCLP sampling of any solid IDW drums that did not meet the "20 times" criteria. When a site soil sample concentration for a hazardous constituent was twenty times or greater than its respective leachate concentration listed in 30 TAC Chapter 335, Subchapter R, Appendix 1, Table 1, a sample was collected. All solid IDW determined to be non-hazardous by this method was transported to the Fort Hood Sanitary Landfill for disposal. All seven drums of solid IDW generated at FH-051 was determined to be non-hazardous. All liquid IDW generated for this SWMU resulted from the decontamination of the drilling rig and other sampling equipment. Liquid IDW was non-hazardous and was disposed of in the 1st Calvary Division Tactical Vehicle Wash Facility. The drums containing the non-hazardous liquid are expected to contain a significant amount of sediment. For this reason, disposal at the 1st Calvary Division Tactical Vehicle Wash Facility was determined to be more appropriate than discharging the liquid to the sanitary sewer

Table 4.1 FH-051 Analytes Detected Above Practical Quantitation Limits (PQLs)

Location	Sample ID	Depth (ft)	Analysis Type	Parameter	Result		PQL	Units
PIT	51SB133	3.0-3.5	Metals	Silver	0.42	B	0.14	mg/kg
SB101	51SB109	0.0-1.0	Metals	Silver	3.6		0.21	mg/kg
SB102	51SB107	0.0-1.0	Metals	Silver	6.3		0.23	mg/kg
SB103	51SB105	0.0-1.0	Metals	Silver	5		0.24	mg/kg
SB104	51SB103	0.0-1.0	Metals	Silver	1.3		0.21	mg/kg
SB105	51SB101	0.0-1.0	Metals	Silver	0.48	B	0.23	mg/kg

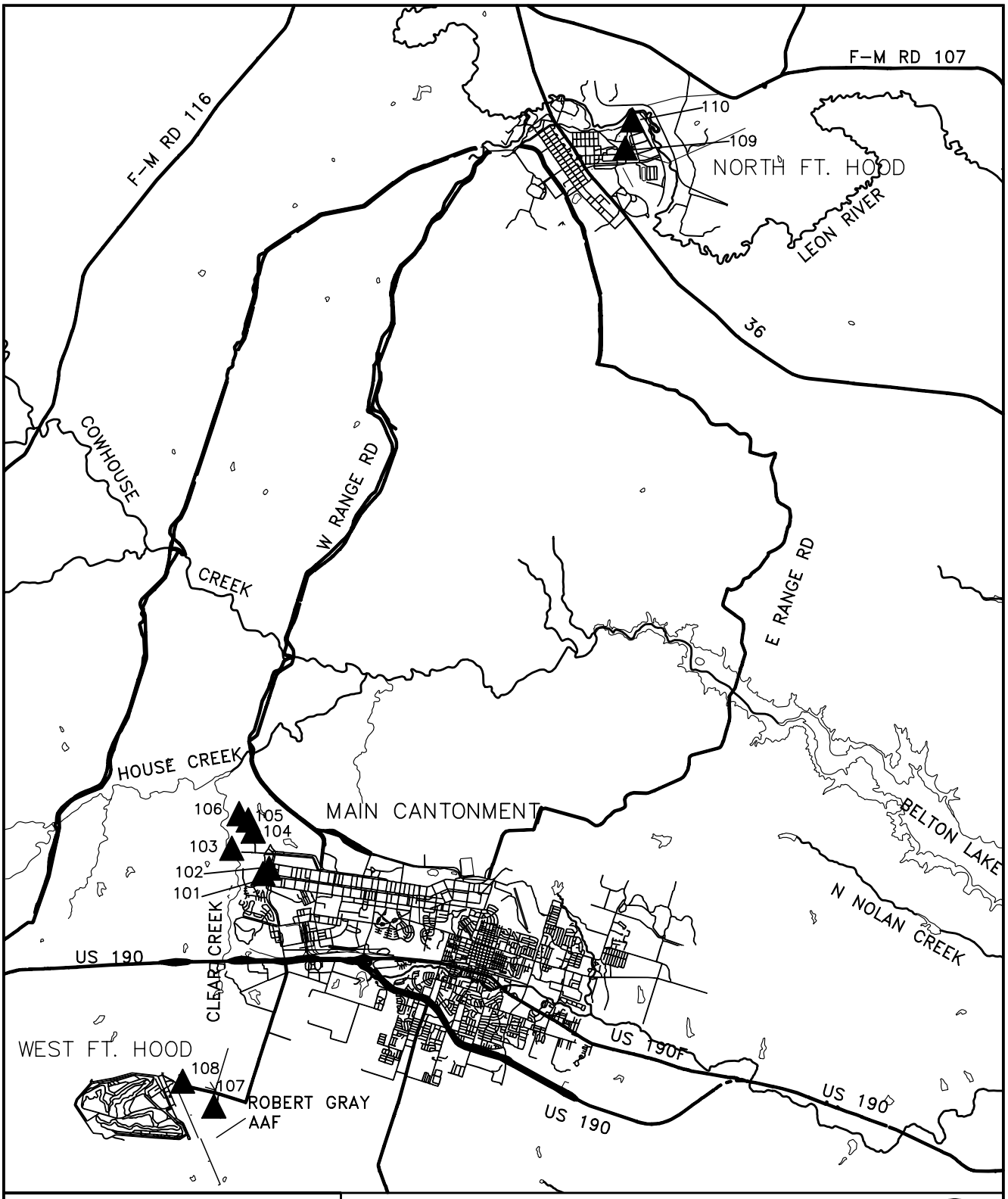
B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

system. The Vehicle Wash Facility is a closed loop system consisting of three ponds used to settle out the dirt and sediment washed off the armored vehicles.

4.4 BACKGROUND CHARACTERIZATION AND COMPARISONS WITH WASTE UNIT SAMPLING RESULTS

In order to characterize naturally occurring constituents in soils at Fort Hood, samples were located and collected at 10 separate locations within the facility boundaries in the north, west, and main cantonments. Sampling locations are believed to be outside the influence of past or current industrial and/or waste activities at the facility. The general background sampling locations are presented in Figure 4.2. Background soils data and soil boring logs are presented in Appendices C and D, respectively.

Background samples were analyzed for the following metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Silver was not detected in any of the background surface or subsurface soil samples. Therefore, no comparisons could be made between FH-051 and background soil results.



LEGEND

- MAJOR ROADS
- RIVERS/STREAMS
- WATER BODIES
- BACKGROUND SOIL SAMPLE LOCATION

U.S. ARMY
FORT HOOD, TEXAS

RCRA FACILITY INVESTIGATION

LOCATIONS OF
BACKGROUND SOIL SAMPLES

SAIC Science Applications International Corporation Columbus, Ohio

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	FIGURE NO.
SC			1"=5000M		4.2

NAME: S:\HOOD\BACK.DWG DATE: OCT 13, 1999 TIME: 5:22 PM PCP: S:\HOOD\PCP\FRP.PCP

5.0 SOIL SCREENING ANALYSIS

The Texas Natural Resource Conservation Commission (TNRCC) has promulgated risk reduction standards (30 TAC 335, Subchapter S) for soils and groundwater for residential and industrial land uses. Risk Reduction Standards (RRSs) Number 1 are defined as background concentrations or analytical practical quantitation limit (PQL) values, whichever are greater. Background and/or PQL values are used to determine if there has been a release of hazardous constituents from a site. As noted in Section 4.3 of this report, silver was not detected in background surface or subsurface soil samples. Therefore, any detection of silver in soil samples above the PQL is considered a release. As noted in Section 4.2 of this report, silver was detected above the PQL in soils 0 -1 ft in depth in initial samples SB101, SB102, SB103, SB104, and SB105. Therefore, there had been a release of silver at site FH-051.

Consequently, it was agreed that the USACE excavate an area outside of the north door of Building 4405 where silver had been detected initially above the PQL in surface soils. Eight confirmatory soil samples were collected and of these samples only one (SB133 at 0.42 ppm) had a value greater than the PQL. To determine whether this concentration presents an unacceptable risk to human health or the environment, it was screened against TNRCC RRSs Number 2.

The TNRCC RRS Number 2 for soils are numerical values established by the TNRCC as protective of human health and the environment. Constituents that are present at levels at or below these values are not considered to be a risk to human health. TNRCC has calculated soil RRSs Number 2 based on two scenarios: (1) ingestion of soil and inhalation of particulates and volatiles and, (2) a soil-to-groundwater cross-media protection concentration. FH-051 soil result was screened against the soil-to-groundwater standard (industrial scenario) of 51.1 ppm because it is the more conservative of the two standards. Silver was not detected in any surface or subsurface soil sample above the TNRCC RRS Number 2. In addition, silver is not present in surface or subsurface soils above the residential soil-to-groundwater standard of 18.3 ppm. Appendix E contains the results of the screening analysis in its entirety.

6.0 INVESTIGATION ANALYSIS

6.1 DATA QUALITY ASSURANCE/QUALITY CONTROL

The Fort Hood RFI Work Plan, the contract laboratory's Quality Assurance Plan, and USEPA SW-846 or other approved procedures for analytical chemistry and physical testing methods were followed for field and laboratory quality assurance/quality control (QA/QC) of FH-051 samples. According to the Work Plan, QA and QC samples were to be collected at a frequency of ten percent and analyzed along with the environmental samples. Field QC samples for FH-051, including trip blanks, equipment reinstate blanks, field duplicate (QC), and split (QA) samples, were collected at FH-051. Quality control analyses such as matrix spikes, blanks, and laboratory control samples were conducted by the contract laboratory as an internal control measure of the accuracy and precision of the data. Quality assurance sample analyses were performed by the Army Corps of Engineers' Southwestern Division Laboratory as an external control measure of the accuracy and precision of the contract laboratory's results and of sampling procedures. The QA/QC and corresponding field sample results were reviewed by Army Corps of Engineers quality assurance personnel, who then issues a Chemical Quality Assurance Report (CQAR). According to the revised CQAR for the original sampling event, the data for FH-051 have no potential weaknesses and are usable as qualified.

Laboratory QC procedures as prescribed by each analytical method were followed by the contract laboratory and included, where applicable: gas chromatography/mass spectrometry (GC/MS) tuning, initial and continuing calibrations, method/extraction blanks, laboratory control samples (LCS), surrogate spikes, internal and external standards, duplicates, matrix spikes/matrix spike duplicates (MS/MSDs), inductively coupled plasma (ICP) and atomic absorption (AA) related QC procedures/samples, and spiked sample clean-up results.

Data QA/QC procedures included an independent data validation of ten percent of the results for compliance of analyses to data quality objectives (DQOs). All FH-051 data that were reviewed for data validation met project DQOs and are usable data as qualified.

6.2 INVESTIGATION RESULTS

The data set for surface and subsurface soils at FH-051 and the quality of the data are usable to meet the objectives of the RFI as described in Section 4.0 of this report. The number and location of the samples were adequate to provide information regarding the presence/absence of silver contamination, the characterization of the vertical and lateral extent of the potential contamination, and the boundaries of the suspected disposal area.

Initially, a total of 14 soil borings were installed and 36 soil samples were collected and analyzed according to the Final RCRA Facility Investigation Work Plan for 35 SWMUs (USACE 1995). Samples were collected from depths ranging from 0 to 10 ft. Silver was detected above PQLs in five of the 36 samples. These detects were at five locations at the 0 - 1 ft depth interval (SB101, SB102, SB103, SB104 and SB105). These locations are directly adjacent to the building where disposal was reported to have occurred. Silver is relatively immobile in soils. The surface soil at the site can be described as a silty clay (see Appendix A) and silver would not be expected to migrate. The analytical data collected at the site confirm this. Silver was not initially detected above PQLs in soils below 1 ft, or in groundwater samples taken at the unit which indicates that silver contamination has not migrated vertically

As a result of these findings of surface soil contamination, an area 50 feet by 20 feet by 3 feet of soil was excavated to remove the contaminated soil. Eight confirmatory soil samples were collected to verify the removal of the contaminated soils at FH-051. Analysis results of these confirmatory samples indicate that silver was detected only in sample SB133 at a concentration of 0.42 ppm at a depth of 3-3.5 feet. This result is less than five times the detection limit of 0.14 ppm (a data validation criteria used for qualifiying samples as nondetects based on blank contamination) and well below the TRNCC RRS 2 for the silver residential soil-to-groundwater standard of 18.3 ppm. Based on the evaluation of the confirmatory data FH-051soils no longer appear to contain a release of silver and no further action is needed.

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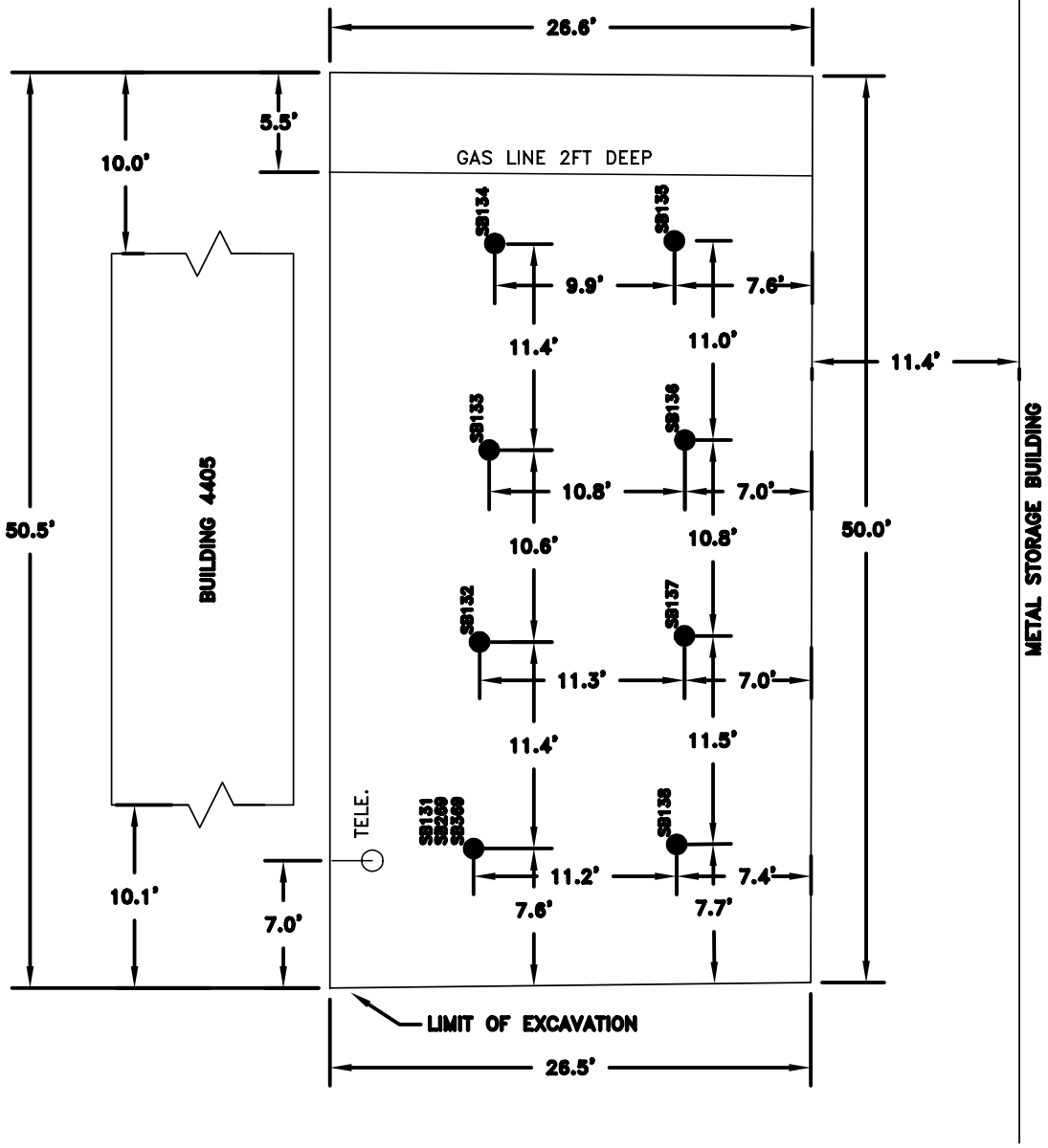
7.0 CONCLUSIONS AND RECOMMENDATIONS

Results of soil analyses conducted on the north side of Building 4405 initially indicated that silver was present above PQLs in 5 of 36 samples collected at the site and therefore, constituted a release under TNRCC RRS Number 1. Figure 7.1 depicts the boring locations where silver was detected above the PQL. All of the detects were in surface soils 0-1 ft in depth. Silver was detected at locations directly adjacent to the building where disposal was reported to have occurred. Silver was not detected above PQLs in soils below 1 ft or in groundwater samples taken at the unit which indicates that silver contamination has not migrated vertically.

An area 50 feet by 20 feet by 3 feet of soil was excavated to remove the contaminated soil at FH-051. Confirmatory soil samples (Figure 7.1) were collected from the bottom of the excavation pit to verify the removal of the contaminated soils. Analysis results of these samples indicate the silver was detected only in sample SB133 at a concentration of 0.42 ppm at a depth of 3-3.5 feet. This result was less than five times the detection limit of 0.14 ppm (a data validation criteria used for qualifiying samples as nondetects based on blank contamination) and well below the TRNCC RRS 2 for the silver residential soil-to-groundwater standard of 18.3 ppm. Based on a professional evaluation of the confirmatory data and initial data results, FH-051soils no longer appear to contain a release of silver and no further action is required at the site.



● SAMPLING LOCATION

N True North

U.S. ARMY CORP OF ENGINEERS
FT. HOOD, TEXAS

FORT HOOD RFI

FH-051 EXCAVATION
CONFIRMATORY LOCATIONS

Science Applications International Corporation — Columbus, Ohio

DRAWN	DATE	SCALE	PROJECT NO.	FIGURE NO.
RTB	8-21-98	1"=10'	04-6010-330	7.1

NAME: S:\HOOD\CONSAMP.DVG DATE: AUG 21, 1998 TIME: 1:36 PM PCP: S:\PCP\WDN.PCP

8.0 REFERENCES

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APPENDIX A

FH-051 Soil Boring Logs

HTRW DRILLING LOG

DIVISION	Fort Worth Dist.
INSTALLATION	Fort Hood
SHEET / SHEETS	1 OF 1
1. PROJECT	FT. Hood RFI
2. LOCATION/STATION	FH051-SB101
3. DRILLING AGENCY	Terra Mar
4. HOLE NUMBER	FH051-SB101
5. NAME OF DRILLER	Bill Christopher
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	10.0'
10. SIZE AND TYPE OF BIT	4 1/4" HSA
11. DATUM FOR ELEVATION SHOWN	NA
12. MANUFACTURER'S DESIGNATION OF DRILL	Mobile B-59
13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN	NA; DISTURBED: ; UNDISTURBED:
14. TOTAL NUMBER OF CORE BOXES	NA
15. GROUNDWATER ELEVATION	NA
16. DATE HOLE	1-16-97; STARTED 1630; COMPLETED 1655
17. ELEVATION TOP OF HOLE	NA
18. TOTAL CORE RECOVERY FOR HOLE	NA ____ PERCENT

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
			(Upper 0.4 topsoil) Silty clay 10YR 7/3 vy. pale brown, soft, mod. plastic, gravel, damp			S1SB109
	1.0					
			same, dry			
	2.0					
			Silty clay mottled 10YR 6/8 brownish yellow and 2.5Y 7/4 pale yellow, mod. plastic, dry, weathered limestone fragments			
	4.0					
			same except trace fine sand, moist			
	5.0					
			same, dry			
	6.0					
	7.0					
			same, no sand, hard, dry			Geotech. Sample
	8.0					
			same, dry			
	9.5					
			same, dry			S1SB110
	10					

SIGNATURE OF INSPECTOR/DATE	PROJECT	HOLE NO.
J. DeDaughn 1-16-97	Ft. Hood RFI	FH051-SB101

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HTRW DRILLING LOG

DIVISION	Fort Worth Dist
INSTALLATION	Ft. Hood
SHEET / SHEETS	1 OF 1
1. PROJECT	Ft. Hood RFI
2. LOCATION/STATION	FHØ51-SB1Ø2
3. DRILLING AGENCY	Terra Mar
4. HOLE NUMBER	FHØ51-SB1Ø2
5. NAME OF DRILLER	Bill Christopher
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	1Ø.Ø
10. SIZE AND TYPE OF BIT	4¼" HSA
11. DATUM FOR ELEVATION SHOWN	NA
12. MANUFACTURER'S DESIGNATION OF DRILL	Mobile B-59
13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN	NA; DISTURBED: ; UNDISTURBED:
14. TOTAL NUMBER OF CORE BOXES	Ø
15. GROUNDWATER ELEVATION	NA
16. DATE HOLE	1-16-97; STARTED 1540; COMPLETED 1610
17. ELEVATION TOP OF HOLE	NA
18. TOTAL CORE RECOVERY FOR HOLE	NA ____ PERCENT

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
	1.Ø		(Upper Ø.5 topsoil) Silty clay 1ØYR7/3 vy. pale brown, soft, mod. plastic, trace gravel, damp			51SB1Ø7
	2.Ø		same, damp			
	4.Ø		Silty clay mottled 1ØYR6/8 brownish yellow and 2.5Y 7/4 pale yellow, mod. plastic, firm, weathered limestone fragments, thin (Ø.3±) zones of fine sand/silt that are wet, overall just damp			
	5.Ø					
	6.Ø		same except little sand, dry, hard			
	8.Ø					
	95					
	1Ø					51SB1Ø8

SIGNATURE OF INSPECTOR/DATE	PROJECT	HOLE NO.
J. DWaughn 1-16-97	Ft. Hood RFI	FHØ51-SB1Ø2

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HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Fort Hood	SHEET 1 OF 1 SHEETS	
1. PROJECT: Ft. Hood RFI	10. SIZE AND TYPE OF BIT: 4¼" HSA		
2. LOCATION/STATION: FH051-SB103	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: Terra Mar	12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-59		
4. HOLE NUMBER: FH051-SB103	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: Ø		
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: 1-16-97	STARTED: 1500	COMPLETED: 1530
8. DEPTH DRILLED INTO ROCK: NA	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 10.0'	18. TOTAL CORE RECOVERY FOR HOLE: NA ____ PERCENT		

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
	1.0		(Upper 0.5 topsoil) Silty clay 10YR7/3 vy. pale brown, soft, mod. plastic, damp, trace gravel			S1SB105
	2.0		same, damp			
	4.0		Silty clay mottled 10YR6/8 brownish yellow and 2.5Y7/4 pale yellow, mod. plastic, dry, weathered limestone fragments			
	5.0		same, damp			
	6.0		same, dry			
	8.0					
	9.5					
	10		same, dry			S1SB106

SIGNATURE OF INSPECTOR/DATE	PROJECT	HOLE NO.
J. DeDamman 1-16-97	Ft. Hood RFI	FH051-SB103

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HTRW DRILLING LOG

DIVISION	Fort Worth Dist.
INSTALLATION	Fort Hood
SHEET / SHEETS	1 OF 1
1. PROJECT	Ft. Hood RFI
2. LOCATION/STATION	FH Ø51-SB1Ø4
3. DRILLING AGENCY	Terra Mar
4. HOLE NUMBER	FHØ51-SB1Ø4
5. NAME OF DRILLER	Bill Christopher
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	1Ø.Ø
10. SIZE AND TYPE OF BIT	4¼" HSA
11. DATUM FOR ELEVATION SHOWN	NA
12. MANUFACTURER'S DESIGNATION OF DRILL	Mobile B-59
13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN	NA; DISTURBED: ; UNDISTURBED:
14. TOTAL NUMBER OF CORE BOXES	Ø
15. GROUNDWATER ELEVATION	NA
16. DATE HOLE	1-16-97; STARTED 14ØØ; COMPLETED 142Ø
17. ELEVATION TOP OF HOLE	NA
18. TOTAL CORE RECOVERY FOR HOLE	NA ____ PERCENT

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
			(Upper Ø.5' topsoil (gravel) Silty clay 1ØYR 7/3 vy. pale brown, soft, mod. plastic, damp, trace gravel			S1SB1Ø3
	1.Ø					
			same, damp			
	2.Ø					
			Silty clay mottled 1ØYR 6/8 brownish yellow and 2.5Y 7/4 pale yellow, mod. plastic, soft, some fine sand, damp, weathered limestone fragments			Geotech. Sample
	3.Ø					
			same, damp			
	4.Ø					
			same, dry			
	6.Ø					
	8.Ø					
	9.5					
	1Ø		same, dry			S1SB1Ø4

SIGNATURE OF INSPECTOR/DATE	PROJECT	HOLE NO.
J. Wayne 1-16-97	Ft. Hood RFI	FHØ51-SB1Ø4

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HTRW DRILLING LOG

DIVISION	Fort Worth Dist
INSTALLATION	Fort Hood
SHEET	1 OF 1 SHEETS
1. PROJECT	Ft. Hood RFI
2. LOCATION/STATION	FHØ51-SB1Ø5
3. DRILLING AGENCY	Terra Mar
4. HOLE NUMBER	FHØ51-SB1Ø5
5. NAME OF DRILLER	Bill Christopher
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	1Ø' bgs
10. SIZE AND TYPE OF BIT	4¼" HSA
11. DATUM FOR ELEVATION SHOWN	NA
12. MANUFACTURER'S DESIGNATION OF DRILL	Mobile B-59
13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN	NA; DISTURBED: ; UNDISTURBED:
14. TOTAL NUMBER OF CORE BOXES	Ø
15. GROUNDWATER ELEVATION	NA
16. DATE HOLE	1-16-97; STARTED 13ØØ; COMPLETED 135Ø
17. ELEVATION TOP OF HOLE	NA
18. TOTAL CORE RECOVERY FOR HOLE	NA ____ PERCENT

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
			(Upper Ø.5 topsoil/gravel) Silty clay 1ØYR 7/3 very pale brown, soft, damp, mod. plastic, gravel			S1SB1Ø1
	1.Ø		same, damp			
	2.Ø		Silty clay mottled 1ØYR 6/8 brownish yellow and 2.5Y 7/4 pale yellow, mod. plastic, dry, weathered limestone fragments			
	4.Ø					
	6.Ø					
	8.Ø					
	9.Ø		same, dry			S1SB1Ø2
	9.5		same, dry			
	1Ø.Ø		TD 1Ø'			

SIGNATURE OF INSPECTOR/DATE	PROJECT	HOLE NO.
J. DeVaughn 1-16-97	Ft. Hood RFI	FHØ51-SB1Ø5

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HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Ft. Hood	PAGE 1 OF 1 PAGES	
1. PROJECT: Ft. Hood RFI	10. SIZE AND TYPE OF BIT: 4½" HSA		
2. LOCATION/STATION: FH Ø51-SB1Ø6	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-59		
4. HOLE NUMBER: SB 1Ø6	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: Ø		
6. DIRECTION OF HOLE: X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: 9/23/97	STARTED 133Ø	COMPLETED 143Ø
8. DEPTH DRILLED INTO ROCK: NA	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 9.5 ft.	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Asphalt			
	Ø.25		Aggregate Base.			
	Ø.5		Silty-sand w/gravel (≤15mm, rounded to sub round) gray 2.5Y 5/1, dry, loose			
	1.2		Silty-sand w/clay and gravel (≤10mm, sub-round), very dark grayish brown 2.5Y3/2, moist, mod. firm, plastic			Smp# 51SB111 (from 1.0 to 2.0) Also split and duplicate collected.
	2.Ø		Silt w/sand and trace gravel (≤10mm), dive yellow 2.5Y 6/6, soft, non-plastic			
	4.Ø					
	5.Ø					
	6.Ø		no recovery			Note: During drilling of SB 1Ø6, the CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	8.Ø		Clayey-silt/weathered limestone white 2.5Y8/1, dry, hard			Smp#51SB112
	9.5		T.D. @ 9.5 ft; refusal.			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE: [signature]	PROJECT: Ft. Hood RFI	HOLE NO. FH Ø51-SB1Ø6

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist	INSTALLATION Ft. Hood	PAGE 1 OF PAGES 1	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4½" HSA		
2. LOCATION/STATION FHØ51-SB1Ø7	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 1Ø7	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/23/97	STARTED 1434	COMPLETED 1520
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 9.5 ft.	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø0.2		Asphalt			
	Ø.5		Aggregate Base			
			Sandy-silt and gravel (up to 15mm, round to sub-round) dark grayish brown 2.5Y 4/2, mod. plastic, moist, soft.			Sample # 51SB113
	2.Ø		Silty-clay w/sand and trace gravel (≤5mm, rounded) very dark gray brown 2.5Y 3/2			
	2.5		Silty-clay w/sand and trace gravel (≤ 10mm) soft, moist, plastic, light yellowish brown 2.5Y 6/3			
	4.Ø					
	6.Ø		no recovery			Note: During drilling of SB 1Ø7, the CGI, O_2 = 2Ø.8% LEL = Ø % PID = Ø ppm
	8.Ø		Silty-sand w/clay, gravel (limestone, angular, ≤ 10mm) firm, slight moist, mod. plastic, light yellowish brown 2.5Y 6/3			Sample # 51SB114
	9.5		T.D. @ 9.5 ft, refusal - Weathered l.s.			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FHØ51-SB1Ø7

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist.	INSTALLATION Ft. Hood	PAGE 1 OF PAGES 1	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4½" HSA		
2. LOCATION/STATION FHØ51-SB1Ø8	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 1Ø8	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/23/97	STARTED 1527	COMPLETED 1545
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 9.5 ft.	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Asphalt			
	Ø.2		Aggregate Base			
	Ø.5		Silty-clay and gravel, dark grayish brown 2.5Y 4/2, moist, plastic.			
	1.Ø		Silty-clay w/sand, pale yellow 2.5 7/4, dry, crumbly			Sample# 51SB115
	2.Ø		Silty-clay w/sand (up to coarse), pale yellow 2.5 7/4, soft, moist, plastic			
	4.Ø					
	6.Ø		no recovery			Note: During drilling of SB 1Ø8, the CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	8.Ø		Silty-sand w/clay, gravel (limestone, angular, ≤10mm) firm, slight moist, mod. plastic, light yellowish brown 2.5Y 6/3			Smp # 51SB116
	9.5		T.D. @ 9.5 ft., refusal.			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FHØ51-SB1Ø8

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HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Ft. Hood	PAGE 1 OF 1 PAGES	
1. PROJECT: Ft. Hood RFI	10. SIZE AND TYPE OF BIT: 4 1/2" HSA		
2. LOCATION/STATION: FH051-SB109	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-59		
4. HOLE NUMBER: SB 109	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: Ø		
6. DIRECTION OF HOLE: X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: 9/23/97	STARTED 1552	COMPLETED 1609
8. DEPTH DRILLED INTO ROCK: NA	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 9.Ø ft.	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Asphalt			
			Aggregate Base			
			Sandy-silt and gravel (≤ 15mm, sub-round) dark grayish brown 2.5Y 4/2, slightly moist, mod. plastic, soft			Smp# 51SB117
	2.Ø		Silty-clay w/sand and tr. gr. (≤ 5mm, sub round) very dark gray brown 2.5Y 3/2			
	4.Ø		Silty-clay w/sand and trace gravel (≤ 10mm), soft, moist, plastic, light yellowish brown 2.5Y 6/3			
	6.Ø		no recovery			Note: during drilling of SB 109, the CGI, O_2 = 20.8% LEL = Ø% PID = Ø ppm
	8.Ø		Silty-sand w/clay, gravel (l.s., ang., ≤ 10mm) firm, slight moist, mod. plastic, light yellowish brown 2.5Y 6/3			Smp# 51SB 118
			T.D. @ 9.Ø ft, refusal			
	10.Ø					

SIGNATURE OF INSPECTOR/DATE: [signature]	PROJECT: Ft. Hood RFI	HOLE NO. FH051-SB109

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist.	INSTALLATION Ft. Hood	PAGE 1 OF 1 PAGES	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4 1/2" HSA		
2. LOCATION/STATION FH051-SB110	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 110	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/23/97	STARTED 1609	COMPLETED 1695
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 8.9 ft	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Asphalt			
	Ø.2		Aggregate Base			
	Ø.5		Sandy-silt and gravel (up to 15mm, round to sub-round) dark grayish brown 2.5Y 4/2, mod. plastic, moist, soft			Smp# 51SB119
	2.Ø		Silty-clay w/sand and tr. gr. (≤5mm, round) very dark gray brown 2.5Y 3/2			
	2.5		Silty-clay w/sand and trace gravel (≤10mm) soft, moist, plastic, light yellowish brown 2.5Y6/3			
	4.Ø					
	6.Ø		no recovery			Note: During drilling of SB 1Ø7, the CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	8.Ø		Silty-sand w/clay, gravel (l.s., angular, ≤10mm) firm, slight moist, mod. plastic, light yellowish brown 2.5Y6/3			Smp# 51SB 12Ø
	8.9		T.D. @ 8.9 ft., refusal-weathered limestone			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FH051-SB110

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Ft. Hood	PAGE 1 OF 1 PAGES	
1. PROJECT: Ft. Hood RFI	10. SIZE AND TYPE OF BIT: 4½" HSA		
2. LOCATION/STATION: FHØ51-SB 111	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-59		
4. HOLE NUMBER: SB 111	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: Ø		
6. DIRECTION OF HOLE: X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: 9/24/97	STARTED: Ø75Ø	COMPLETED: Ø84Ø
8. DEPTH DRILLED INTO ROCK: NA	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 8.2 ft	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Topsoil			Smp# 51 SB 121 (Ø'-2')
	1.0		Clayey-silt w/sand and gravel, (sub angular, up to 15mm) Pale yellow 2.5Y 8/2, dry brittle, mod. hard.			
	2.Ø					
	3.Ø		Clayey silt w/sand and gravel, (zonal, ≤15mm, angular to sub ang.) pale yellow 2.5Y 7/4, slight moist, slight plastic, mod. firm			Note: During drilling of SB 111, the CGI O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	4.Ø					
	5.Ø		Silty-clay w/trace sand (fine-med.) light yellowish brown 2.5Y 6/3, mod. firm, moist, very plastic (mottled)			
	6.Ø					
	7.2		Same as above, but w/gravel (ang to sub ang., ≤15mm)			Smp. #51 SB 122 (7'-8')
	7.6		weathered limestone			
	8.Ø					
	8.2		TD@ 8.2, refusal			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE: [signature]	PROJECT: Ft. Hood RFI	HOLE NO. FHØ51-SB 111

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist.	INSTALLATION Ft. Hood	PAGE 1 OF PAGES 1	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4½" HSA		
2. LOCATION/STATION FH Ø51-SB 112	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 112	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/24/97	STARTED Ø854	COMPLETED 0975
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 7.5'	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Topsoil. Sandy loam w/ trace gravel (up to 10mm, sub round) very dark grayish brown, 2.5Y 3/2, moist, slight plastic, soft.			Smp# 51SB 123 (0'-2)
	1.5		Sandy-Silt and gravel (≤15mm, angular) grayish brown 2.5Y 5/2, dry to slightly moist, loose, non-plastic			
	2.Ø		Silty-clay w/ sand (fine) and trace gravel (≤10mm, angular) White 2.5Y 8/1, loose, powdery dry			
	2.5		Clayey-silt w/ sand and gravel (angular-sub angular, ≤15mm) mottled light yellowish brown) slight plastic, moist, firm.			Note: During drilling of SB 112, the CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	4.Ø					
	5.3		Silty-clay w/ trace sand (fine gr.) light yellowish brown 2.5Y 6/3, moist, very plastic (with zones of white powdery silty clay)			
	6.Ø					
	7.3					(7-7.5) Smp# 51SB 124
	7.5		Weathered Limestone			
	8.Ø		TD@7.5; refusal			
	10.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FH Ø51-SB 112

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Ft. Hood	PAGE 1 OF 1	
1. PROJECT: Ft. Hood RFI	10. SIZE AND TYPE OF BIT: 4½" HSA		
2. LOCATION/STATION: FHØ51-SB113	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-59		
4. HOLE NUMBER: SB 113	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: Ø		
6. DIRECTION OF HOLE: X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: 9/24/97	STARTED Ø948	COMPLETED 1Ø15
8. DEPTH DRILLED INTO ROCK: NA	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 6.3 ft	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Topsoil - Sandy loam w/ trace gravel (up to 10mm, sub rounded) very dark gray brown 2.5Y 3/2, moist, slight plastic			Smp # 51SB125 (Ø'-2')
			Sandy-silt and gravel (≤15mm, angular) grayish brown 2.5Y 5/2, dry to sl. moist, loose, non plastic			
	2.Ø		Silt, white 2.5Y 8/1, w/ fine sand, dry, slightly firm to soft, (weathered limestone)			
	4.Ø		Silty-sand w/ some gravel (≤15mm), mottled pale yellow 2.5Y 7/4, dry, crumbly, (weathered l.s.)			Note: during drilling activities of SB113, CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	6.Ø					
	6.3		White Weathered Limestone			Smp # 51SB126
			T.D. @ 6.3'; Refusal			
	8.Ø					
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE: [signature]	PROJECT: Ft. Hood RFI	HOLE NO. FHØ51-SB 113

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist.	INSTALLATION Ft. Hood	PAGE 1 OF PAGES 1	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4½" HSA		
2. LOCATION/STATION FH Ø51-SB 114	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 114	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/24/97	STARTED 1035	COMPLETED 1105
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 4.Ø'	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø		Topsoil			
	Ø.5		Silty sand, some gravel (sub-round, ≤ 10mm); trace clay, light brownish gray 2.5Y 6/2, med. firm, moist, slight plastic			Smp # 51SB127
	1.8					
	2.Ø		Silty sand and clay, white, hard, dry, brittle (weathered limestone)			Smp # 51SB 128
	3.5		Limestone.			
	4.Ø		T.D @ 4.0; refusal.			Note: during drilling of SB 114, CGI O_2 = 2Ø.8 % LEL = Ø % PID = Ø ppm
	6.Ø					
	8.Ø					
	10.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FH Ø51-SB 114

SAIC 1997 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION Fort Worth Dist.	INSTALLATION Ft. Hood	PAGE 1 OF PAGES 1	
1. PROJECT Ft. Hood RFI	10. SIZE AND TYPE OF BIT 4½" HSA		
2. LOCATION/STATION FH Ø51-SB115	11. DATUM FOR ELEVATION SHOWN NA		
3. DRILLING AGENCY Terra-Mar	12. MANUFACTURER'S DESIGNATION OF DRILL Mobile B-59		
4. HOLE NUMBER SB 115	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER Bill Christopher	14. TOTAL NUMBER OF CORE BOXES Ø		
6. DIRECTION OF HOLE X VERTICAL ___ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION NA		
7. THICKNESS OF OVERBURDEN NA	16. DATE HOLE 9/24/97	STARTED 1112	COMPLETED 1133
8. DEPTH DRILLED INTO ROCK NA	17. ELEVATION TOP OF HOLE NA		
9. TOTAL DEPTH OF HOLE 7.3 ft	18. TOTAL CORE RECOVERY FOR HOLE NA ___ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	Ø Ø.3		Topsoil			
			Silty-sand, trace clay and some gravel (up to 10 mm)			Smp# 51SB129 (0'-2')
	2.Ø		Weathered Limestone			
			Silty-clay w/ trace sand w/some gravel (ang.-subang., ≤ 20mm) light yellowish brown, 2.5Y 6/4, very plastic, moist firm			
	4.Ø		Weathered Limestone			Note: during drilling activities of SB 115, CGI, O_2 = 2Ø.8% LEL = Ø% PID = Ø ppm
	6.Ø		Silty-clay w/ trace sand and gravel (ang.-sub-ang., ≤ 20mm) light yellowish brown 2.5Y 6/4, very plastic, moist, firm			Smp# 51SB 130 (6'-7')
			Limestone			
	8.Ø		TD @ 7.3 ft; Refusal			
	1Ø.Ø					

SIGNATURE OF INSPECTOR/DATE [signature]	PROJECT Ft. Hood RFI	HOLE NO. FH Ø51-SB115

SAIC 1997 after ENG FORM 1836

APPENDIX B

FH-051 Analytical Results

FH-051 Analytical Results

Location	Sample ID	COE Sample ID	Date Collected	Depth	CAS Number	Parameter	Result	Detection Limit	Units of Measure	Lab * Qual	Data** Qual	Method
PIT	51SB131	FH051-SB131/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.14	0.14	mg/kg	U		SW 6010B
PIT	51SB132	FH051-SB132/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.13	0.13	mg/kg	U		SW 6010B
PIT	51SB133	FH051-SB133/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.42	0.14	mg/kg	B		SW 6010B
PIT	51SB134	FH051-SB134/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.13	0.13	mg/kg	U		SW 6010B
PIT	51SB135	FH051-SB135/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.13	0.13	mg/kg	U		SW 6010B
PIT	51SB136	FH051-SB136/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.15	0.15	mg/kg	U		SW 6010B
PIT	51SB137	FH051-SB137/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.13	0.13	mg/kg	U		SW 6010B
PIT	51SB138	FH051-SB138/07-16-98/3.0-3.5	19980716	3.0-3.5	7440-22-4	Silver	0.13	0.13	mg/kg	U		SW 6010B
SB101	51SB109	FH051-SB109/01-16-97/0.0-1.0	19970116	0.0-1.0	7440-22-4	Silver	3.6	0.21	mg/kg			SW846 6010
SB101	51SB110	FH051-SB110/01-16-97/9.5-10.0	19970116	9.5-10.0	7440-22-4	Silver	0.21	0.21	mg/kg	U		SW846 6010
SB101	FHGW108	FH051-GW108/01-17-97	19970117	0.0-0.0	7440-22-4	Silver	1.2	1.2	ug/l	U		SW846 6010
SB102	51SB107	FH051-SB107/01-16-97/0.0-1.0	19970116	0.0-1.0	7440-22-4	Silver	6.3	0.23	mg/kg			SW846 6010
SB102	51SB108	FH051-SB108/01-16-97/9.5-10.0	19970116	9.5-10.0	7440-22-4	Silver	0.21	0.21	mg/kg	U		SW846 6010
SB102	FHGW107	FH051-GW107/01-17-97	19970117	0.0-0.0	7440-22-4	Silver	1.2	1.2	ug/l	U		SW846 6010
SB103	51SB105	FH051-SB105/01-16-97/0.0-1.0	19970116	0.0-1.0	7440-22-4	Silver	5	0.24	mg/kg			SW846 6010
SB103	51SB106	FH051-SB106/01-16-97/9.5-10.0	19970116	9.5-10.0	7440-22-4	Silver	0.23	0.23	mg/kg	U		SW846 6010
SB103	FHGW106	FH051-GW106/01-17-97	19970117	0.0-0.0	7440-22-4	Silver	1.2	1.2	ug/l	U		SW846 6010
SB104	51SB103	FH051-SB103/01-16-97/0.0-1.0	19970116	0.0-1.0	7440-22-4	Silver	1.3	0.21	mg/kg			SW846 6010
SB104	51SB104	FH051-SB104/01-16-96/9.5-10.0	19970116	9.5-10.0	7440-22-4	Silver	0.22	0.22	mg/kg	U		SW846 6010
SB105	51SB101	FH051-SB101/01-16-97/0.0-1.0	19970116	0.0-1.0	7440-22-4	Silver	0.48	0.23	mg/kg	B		SW846 6010
SB105	51SB102	FH051-SB102/01-16-97/9.0-9.5	19970116	9.0-9.5	7440-22-4	Silver	0.21	0.21	mg/kg	U		SW846 6010
SB106	51SB111	FH051-SB111/09-23-97/1.0-2.0	19970923	1.0-2.0	7440-22-4	Silver	0.31	0.31	mg/kg	U		SW846 6010
SB106	51SB112	FH051-SB112/09-23-97/8.0-9.5	19970923	8.0-9.5	7440-22-4	Silver	0.3	0.3	mg/kg	U		SW846 6010
SB107	51SB113	FH051-SB113/09-23-97/0.5-2.0	19970923	0.5-2.0	7440-22-4	Silver	0.31	0.31	mg/kg	U		SW846 6010
SB107	51SB114	FH051-SB114/09-23-97/8.0-9.5	19970923	8.0-9.5	7440-22-4	Silver	0.28	0.28	mg/kg	U		SW846 6010
SB108	51SB115	FH051-SB115/09-23-97/0.5-2.0	19970923	0.5-2.0	7440-22-4	Silver	0.29	0.29	mg/kg	U		SW846 6010
SB108	51SB116	FH051-SB116/09-23-97/8.0-9.5	19970923	8.0-9.5	7440-22-4	Silver	0.29	0.29	mg/kg	U		SW846 6010
SB109	51SB117	FH051-SB117/09-23-97/0.5-2.0	19970923	0.5-2.0	7440-22-4	Silver	0.27	0.27	mg/kg	U		SW846 6010
SB109	51SB118	FH051-SB118/09-23-97/8.0-9.0	19970923	8.0-9.0	7440-22-4	Silver	0.27	0.27	mg/kg	U		SW846 6010
SB110	51SB119	FH051-SB119/09-23-97/0.5-2.0	19970923	0.5-2.0	7440-22-4	Silver	0.32	0.32	mg/kg	U		SW846 6010

Location	Sample ID	COE Sample ID	Date Collected	Depth	CAS Number	Parameter	Result	Detection Limit	Units of Measure	Lab * Qual	Data** Qual	Method
SB110	51SB120	FH051-SB120/09-23-97/8.0-8.9	19970923	8.0-8.9	7440-22-4	Silver	0.29	0.29	mg/kg	U		SW846 6010
SB111	51SB121	FH051-SB121/09-24-97/0.0-2.0	19970924	0.0-2.0	7440-22-4	Silver	0.27	0.27	mg/kg	U		SW846 6010
SB111	51SB122	FH051-SB122/09-24-97/7.0-8.0	19970924	7.0-8.0	7440-22-4	Silver	0.29	0.29	mg/kg	U		SW846 6010
SB112	51SB123	FH051-SB123/09-23-97/0.0-2.0	19970924	0.0-2.0	7440-22-4	Silver	0.26	0.26	mg/kg	U		SW846 6010
SB112	51SB124	FH051-SB124/09-24-97/6.0-7.5	19970924	6.0-7.5	7440-22-4	Silver	0.3	0.3	mg/kg	U		SW846 6010
SB113	51SB125	FH051-SB125/09-24-97/0.0-2.0	19970924	0.0-2.0	7440-22-4	Silver	0.27	0.27	mg/kg	U		SW846 6010
SB113	51SB126	FH051-SB126/09-24-97/6.0-6.3	19970924	6.0-6.3	7440-22-4	Silver	0.26	0.26	mg/kg	U		SW846 6010
SB114	51SB127	FH051-SB127/09-24-97/0.0-2.0	19970924	0.0-2.0	7440-22-4	Silver	0.29	0.29	mg/kg	U		SW846 6010
SB114	51SB128	FH051-SB128/09-24-97/3.5-4.0	19970924	3.5-4.0	7440-22-4	Silver	0.26	0.26	mg/kg	U		SW846 6010
SB115	51SB129	FH051-SB129/09-24-97/0.0-2.0	19970924	0.0-2.0	7440-22-4	Silver	0.28	0.28	mg/kg	U		SW846 6010
SB115	51SB130	FH051-SB130/09-24-97/6.0-7.3	19970924	6.0-7.3	7440-22-4	Silver	0.3	0.3	mg/kg	U		SW846 6010
	ER030	FH051-ER030/01-16-97	19970116		7440-22-4	Silver	1.2	1.2	ug/l	U		SW846 6010
	ER031	FH051-ER031/01-17-97	19970117		7440-22-4	Silver	1.2	1.2	ug/l	U		SW846 6010
	ER081	FH051-ER081/09-17-97	19970917		7440-22-4	Silver	1	1.0	ug/l	U		SW846 6010
	ER084	FH051-ER084/09-21-97	19970921		7440-22-4	Silver	1	1.0	ug/l	U		SW846 6010

APPENDIX C

Fort Hood RFI Background Soils Data

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB101 Background Soil Boring SB101

Sample ID: FH000-SB10112-10-96/2.0-2.5 (BKSB101) Sample Depth: 2.0-2.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3	0.41	MG/KG		
Barium	21.3	0.10	MG/KG	*	J
Cadmium	0.12	0.05	MG/KG	B	
Chromium	5.1	0.10	MG/KG	E*	J
Lead	6	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.37	0.37	MG/KG	U	U
Silver	0.24	0.24	MG/KG	U	U

Sample ID: FH000-SB10212-10-96/4.0-4.7 (BKSB102) Sample Depth: 4.0-4.7 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2	0.39	MG/KG		
Barium	8	0.10	MG/KG	*	J
Cadmium	0.05	0.05	MG/KG	B	
Chromium	10.3	0.10	MG/KG	E*	J
Lead	5	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.36	0.36	MG/KG	U	U
Silver	0.23	0.23	MG/KG	U	U

Sample ID: FH000-SB10312-10-96/10.5-11.0 (BKSB103) Sample Depth: 10.5-11.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	9.1	0.42	MG/KG		
Barium	14.7	0.10	MG/KG	*	J
Cadmium	0.05	0.05	MG/KG	U	U
Chromium	10.1	0.10	MG/KG	E*	J
Lead	9.5	0.18	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.38	0.38	MG/KG	U	U
Silver	0.24	0.24	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB102 Background Soil Boring SB102

Sample ID: FH000-SB12112-12-96/0.0-1.5 (BKSB121) Sample Depth: 0.0-1.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.1	0.38	MG/KG		
Barium	24	0.09	MG/KG		
Cadmium	0.18	0.05	MG/KG	B	
Chromium	6.3	0.09	MG/KG		
Lead	10.2	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB12212-12-96/14.0-14.5 (BKSB122) Sample Depth: 14.0-14.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.2	0.36	MG/KG		
Barium	6.1	0.09	MG/KG		
Cadmium	0.06	0.04	MG/KG	B	
Chromium	4.9	0.09	MG/KG		
Lead	4.1	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB12312-12-96/19.0-19.5 (BKSB123) Sample Depth: 19.0-19.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.8	0.36	MG/KG		
Barium	5.5	0.09	MG/KG		
Cadmium	0.08	0.04	MG/KG	B	
Chromium	4.3	0.09	MG/KG		
Lead	3.8	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB20212-12-96/0.0-1.5 (BKSB202) Sample Depth: 0.0-1.5 FT

Matrix: Soil Field Sample Type: Field Duplicate Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.2	0.37	MG/KG		
Barium	18.2	0.09	MG/KG		
Cadmium	0.12	0.04	MG/KG	B	
Chromium	5.9	0.09	MG/KG		
Lead	4.5	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB103 Background Soil Boring SB103

Sample ID: FH000-SB10412-10-96/0.0-1.5 (BKSB104) Sample Depth: 0.0-1.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	6.2	0.35	MG/KG		
Barium	28.2	0.08	MG/KG	*	J
Cadmium	0.15	0.04	MG/KG	B	
Chromium	3.1	0.08	MG/KG	E*	J
Lead	5.3	0.15	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	U	U
Silver	0.2	0.20	MG/KG	U	U

Sample ID: FH000-SB10512-10-96/4.0-6.0 (BKSB105) Sample Depth: 4.0-6.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.3	0.36	MG/KG		
Barium	23.4	0.09	MG/KG	*	J
Cadmium	0.11	0.04	MG/KG	B	
Chromium	4	0.09	MG/KG	E*	J
Lead	3.9	0.15	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB10612-10-96/9.0-9.4 (BKSB106) Sample Depth: 9.0-9.4 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.4	0.37	MG/KG		
Barium	43.7	0.09	MG/KG	*	J
Cadmium	0.16	0.04	MG/KG	B	
Chromium	7.6	0.09	MG/KG	E*	J
Lead	5	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB10712-10-96/14.0-15.0 (BKSB107) Sample Depth: 14.0-15.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/10/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	53	0.39	MG/KG		
Barium	1350	0.09	MG/KG	*	J
Cadmium	0.35	0.05	MG/KG	B	
Chromium	5.1	0.09	MG/KG	E*	J
Lead	6.1	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.36	0.36	MG/KG	U	U
Silver	0.23	0.23	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB104 Background Soil Boring SB104

Sample ID: FH000-SB10812-11-96/0.0-1.0 (BKSB108) Sample Depth: 0.0-1.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Quaifiers Lab	Quaifiers Data
Arsenic	6	0.40	MG/KG		
Barium	72.4	0.10	MG/KG	*	J
Cadmium	0.2	0.05	MG/KG	B	
Chromium	12.9	0.10	MG/KG	E*	J
Lead	9.8	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.37	0.37	MG/KG	U	U
Silver	0.23	0.23	MG/KG	U	U

Sample ID: FH000-SB10912-11-96/4.0-5.0 (BKSB109) Sample Depth: 4.0-5.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Quaifiers Lab	Quaifiers Data
Arsenic	3.5	0.38	MG/KG		
Barium	155	0.09	MG/KG	*	J
Cadmium	0.07	0.05	MG/KG	B	
Chromium	6.5	0.09	MG/KG	E*	J
Lead	3.2	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB11012-11-96/11.0-11.5 (BKSB110) Sample Depth: 11.0-11.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Quaifiers Lab.	Quaifiers Data
Arsenic	4.8	0.40	MG/KG		
Barium	24.1	0.10	MG/KG	*	J
Cadmium	0.06	0.05	MG/KG	B	
Chromium	16.6	0.10	MG/KG	E*	J
Lead	7.8	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.36	0.36	MG/KG	U	U
Silver	0.23	0.23	MG/KG	U	U

Sample ID: FH000-SB11112-11-96/18.0-18.5 (BKSB111) Sample Depth: 18.0-18.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Quaifiers Lab	Quaifiers Data
Arsenic	5.2	0.38	MG/KG		
Barium	7.2	0.09	MG/KG	*	J
Cadmium	0.05	0.05	MG/KG	B	
Chromium	6.2	0.09	MG/KG	E*	J
Lead	5.3	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.35	0.35	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB105 Background Soil Boring SB105

Sample ID: FH000-SB11212-11-96/1.0-1.5 (BKSB112) Sample Depth: 1.0-1.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	1.6	0.35	MG/KG		
Barium	6.6	0.09	MG/KG	*	J
Cadmium	0.04	0.04	MG/KG	U	U
Chromium	4	0.09	MG/KG	E*	J
Lead	1.5	0.15	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	U	U
Silver	0.2	0.20	MG/KG	U	U

Sample ID: FH000-SB11312-11-96/4.0-5.0 (BKSB113) Sample Depth: 4.0-5.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.7	0.40	MG/KG		
Barium	20.5	0.10	MG/KG	*	J
Cadmium	0.07	0.05	MG/KG	B	
Chromium	8.9	0.10	MG/KG	E*	J
Lead	6	0.17	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.36	0.36	MG/KG	U	U
Silver	0.23	0.23	MG/KG	U	U

Sample ID: FH000-SB11412-11-96/11.0-12.0 (BKSB114) Sample Depth: 11.0-12.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.2	0.42	MG/KG		
Barium	25.2	0.10	MG/KG	*	J
Cadmium	0.05	0.05	MG/KG	U	U
Chromium	20.3	0.10	MG/KG	E*	J
Lead	7.7	0.18	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.38	0.38	MG/KG	U	U
Silver	0.24	0.24	MG/KG	U	U

Sample ID: FH000-SB11512-11-96/15.0-15.5 (BKSB115) Sample Depth: 15.0-15.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.3	0.36	MG/KG		
Barium	10.6	0.09	MG/KG	*	J
Cadmium	0.06	0.04	MG/KG	B	
Chromium	7.3	0.09	MG/KG	E*	J
Lead	5.1	0.15	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	U	U
Silver	0.2	0.20	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB11612-11-96/22.0-22.5 (BKSB116) Sample Depth: 22.0-22.5 FT

Matrix: Soil Field Sample Type: Grab Collected: 12/11/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	11.6	0.37	MG/KG		
Barium	4.9	0.09	MG/KG	*	J
Cadmium	0.2	0.04	MG/KG	B	
Chromium	2.7	0.09	MG/KG	E*	J
Lead	5.6	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB106 Background Soil Boring SB106

Sample ID: FH000-SB11712-12-96/0.0-1.0 (BKSB117) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.4	0.37	MG/KG		
Barium	27.9	0.09	MG/KG	*	J
Cadmium	0.18	0.04	MG/KG	B	
Chromium	5.7	0.09	MG/KG	E*	J
Lead	8.3	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB11812-12-96/9.0-9.5 (BKSB118) Sample Depth: 9.0-9.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2.6	0.37	MG/KG		
Barium	4.4	0.09	MG/KG	*	J
Cadmium	0.19	0.04	MG/KG	B	
Chromium	2.2	0.09	MG/KG	E*	J
Lead	3.7	0.16	MG/KG	EN*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB11912-12-96/14.0-14.5 (BKSB119) Sample Depth: 14.0-14.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	0.66	0.37	MG/KG	B	
Barium	3	0.09	MG/KG		
Cadmium	0.06	0.04	MG/KG	B	
Chromium	2.1	0.09	MG/KG		
Lead	1.3	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB12012-12-96/19.0-20.0 (BKSB120) Sample Depth: 19.0-20.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	0.44	0.35	MG/KG	B	
Barium	2	0.08	MG/KG		
Cadmium	0.04	0.04	MG/KG	U	U
Chromium	0.93	0.08	MG/KG	B	
Lead	0.72	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	U	U
Silver	0.2	0.20	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB20112-12-96/0.0-1.0 (BKSB201) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Field Duplicate Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.4	0.36	MG/KG		
Barium	17.9	0.09	MG/KG		
Cadmium	0.14	0.04	MG/KG	B	
Chromium	2.6	0.09	MG/KG		
Lead	5.9	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB107 Background Soil Boring SB107

Sample ID: FH000-SB12412-12-96/0.0-1.0 (BKSB124) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	6	0.37	MG/KG		
Barium	19.3	0.09	MG/KG		
Cadmium	0.11	0.04	MG/KG	B	
Chromium	7.2	0.09	MG/KG		
Lead	4.5	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB12512-12-96/4.0-4.5 (BKSB125) Sample Depth: 4.0-4.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.2	0.35	MG/KG		
Barium	18.1	0.09	MG/KG		
Cadmium	0.11	0.04	MG/KG	B	
Chromium	5.1	0.09	MG/KG		
Lead	1.7	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.36	0.32	MG/KG	B	
Silver	0.2	0.20	MG/KG	U	U

Sample ID: FH000-SB12612-12-96/5.5-6.0 (BKSB126) Sample Depth: 5.5-6.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2.5	0.36	MG/KG		
Barium	5.4	0.09	MG/KG		
Cadmium	0.06	0.04	MG/KG	B	
Chromium	5.5	0.09	MG/KG		
Lead	1.5	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.44	0.33	MG/KG	B	
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB20312-12-96/0.0-1.0 (BKSB203) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Field Duplicate Collected: 12/12/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.9	0.37	MG/KG		
Barium	39	0.09	MG/KG		
Cadmium	0.17	0.05	MG/KG	B	
Chromium	9.3	0.09	MG/KG		
Lead	6.6	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB108 Background Soil Boring SB108

Sample ID: FH000-SB135/01-14-97/0.0-1.0 (BKSB135) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/14/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2.7	0.36	MG/KG		
Barium	15.4	0.09	MG/KG	*	J
Cadmium	0.17	0.04	MG/KG	B*	J
Chromium	6.1	0.09	MG/KG		
Lead	2.5	0.15	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	1.5	1.5	MG/KG	UWN	R
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB136/01-14-97/5.0-5.5 (BKSB136) Sample Depth: 5.0-5.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/14/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.3	0.38	MG/KG		
Barium	14.8	0.09	MG/KG	*	J
Cadmium	0.2	0.05	MG/KG	B*	J
Chromium	8.3	0.09	MG/KG		
Lead	3	0.16	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	UWN	R
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB137/01-14-97/9.0-9.5 (BKSB137) Sample Depth: 9.0-9.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/14/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	8.2	0.36	MG/KG		
Barium	7.8	0.09	MG/KG	*	J
Cadmium	0.18	0.04	MG/KG	B*	J
Chromium	8.1	0.09	MG/KG		
Lead	2.3	0.15	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.31	0.31	MG/KG	UWN	R
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB138/01-14-97/14.0-14.5 (BKSB138) Sample Depth: 14.0-14.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/14/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	9.2	0.38	MG/KG		
Barium	12.2	0.09	MG/KG	*	J
Cadmium	0.21	0.05	MG/KG	B*	J
Chromium	11.1	0.09	MG/KG		
Lead	4.1	0.16	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	UWN	R
Silver	0.22	0.22	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB139/01-14-97/16.5-17.0 (BKSB139) Sample Depth: 16.5-17.0 FT

Matrix: Soil Field Sample Type: Grab Collected: 01/14/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	7.6	0.37	MG/KG		
Barium	7.3	0.09	MG/KG	*	J
Cadmium	0.2	0.04	MG/KG	B*	J
Chromium	8.4	0.09	MG/KG		
Lead	3.6	0.16	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.31	0.31	MG/KG	UWN	R
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB109 Background Soil Boring SB109

Sample ID: FH000-SB140/01-15-97/0.0-1.0 (BKSB140) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/15/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.8	0.41	MG/KG		
Barium	108	0.10	MG/KG	*	J
Cadmium	0.79	0.05	MG/KG	*	J
Chromium	16.1	0.10	MG/KG		
Lead	33.2	0.17	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.35	0.35	MG/KG	UWN	R
Silver	0.24	0.24	MG/KG	U	U

Sample ID: FH000-SB141/01-15-97/4.0-5.0 (BKSB141) Sample Depth: 4.0-5.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/15/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.6	0.43	MG/KG		
Barium	127	0.10	MG/KG	*	J
Cadmium	0.45	0.05	MG/KG	B*	J
Chromium	23.6	0.10	MG/KG		
Lead	12.1	0.18	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	1.8	1.8	MG/KG	UN	R
Silver	0.25	0.25	MG/KG	U	U

Sample ID: FH000-SB142/01-15-97/9.0-10.0 (BKSB142) Sample Depth: 9.0-10.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/15/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.8	0.44	MG/KG		
Barium	63	0.11	MG/KG	*	J
Cadmium	0.29	0.05	MG/KG	B*	J
Chromium	8.4	0.11	MG/KG		
Lead	5	0.19	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	1.9	1.9	MG/KG	UWN	R
Silver	0.25	0.25	MG/KG	U	U

Sample ID: FH000-SB143/01-15-97/14.5-15.0 (BKSB143) Sample Depth: 14.5-15.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 01/15/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.8	0.41	MG/KG		
Barium	39.3	0.10	MG/KG	*	J
Cadmium	0.27	0.05	MG/KG	B*	J
Chromium	12.2	0.10	MG/KG		
Lead	6.6	0.17	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.35	0.35	MG/KG	UWN	R
Silver	0.24	0.24	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB144/01-15-97/19.0-19.3 (BKSB144) Sample Depth: 19.0-19.3 FT

Matrix: Soil Field Sample Type: Grab Collected: 01/15/97

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.7	0.37	MG/KG		
Barium	36.1	0.09	MG/KG	*	J
Cadmium	0.2	0.04	MG/KG	B*	J
Chromium	6.5	0.09	MG/KG		
Lead	4	0.16	MG/KG	*	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.31	0.31	MG/KG	UWN	R
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Station: SB110 Background Soil Boring SB110

Sample ID: FH000-SB12712-13-96/0.0-1.0 (BKSB127) Sample Depth: 0.0-1.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	1.9	0.36	MG/KG		
Barium	18.8	0.09	MG/KG		
Cadmium	0.04	0.04	MG/KG	U	U
Chromium	3.7	0.09	MG/KG		
Lead	3.8	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB12812-13-96/4.0-6.0 (BKSB128) Sample Depth: 4.0-6.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.6	0.38	MG/KG		
Barium	36.3	0.09	MG/KG		
Cadmium	0.05	0.05	MG/KG	U	U
Chromium	8.5	0.09	MG/KG		
Lead	7.5	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG		
Selenium	0.35	0.35	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB12912-13-96/10.0-11.0 (BKSB129) Sample Depth: 10.0-11.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2.6	0.36	MG/KG		
Barium	26.3	0.09	MG/KG		
Cadmium	0.04	0.04	MG/KG	U	U
Chromium	4.6	0.09	MG/KG		
Lead	4.1	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB13012-13-96/15.0-16.0 (BKSB130) Sample Depth: 15.0-16.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	1	0.35	MG/KG	B	
Barium	8.1	0.08	MG/KG		
Cadmium	0.07	0.04	MG/KG	B	
Chromium	1.8	0.08	MG/KG		
Lead	3.1	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.32	0.32	MG/KG	U	U
Silver	0.2	0.20	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB13112-13-96/20.0-21.0 (BKSB131) Sample Depth: 20.0-21.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	5.3	0.38	MG/KG		
Barium	65.9	0.09	MG/KG		
Cadmium	0.15	0.05	MG/KG	B	
Chromium	7.7	0.09	MG/KG		
Lead	10.1	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB13212-13-96/25.0-26.0 (BKSB132) Sample Depth: 25.0-26.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	4.2	0.37	MG/KG		
Barium	41.7	0.09	MG/KG		
Cadmium	0.04	0.04	MG/KG	U	U
Chromium	5.9	0.09	MG/KG		
Lead	7.8	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.34	0.34	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Sample ID: FH000-SB13312-13-96/30.0-31.0 (BKSB133) Sample Depth: 30.0-31.0 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.2	0.39	MG/KG		
Barium	68.6	0.09	MG/KG		
Cadmium	0.11	0.05	MG/KG	B	
Chromium	4.9	0.09	MG/KG		
Lead	6.3	0.17	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.35	0.35	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

Sample ID: FH000-SB13412-13-96/34.0-34.5 (BKSB134) Sample Depth: 34.0-34.5 FT
Matrix: Soil Field Sample Type: Grab Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	2.9	0.36	MG/KG		
Barium	20.1	0.09	MG/KG		
Cadmium	0.08	0.04	MG/KG	B	
Chromium	1.2	0.09	MG/KG		
Lead	2.3	0.15	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.33	0.33	MG/KG	U	U
Silver	0.21	0.21	MG/KG	U	U

Ft. Hood RCRA Facility Investigation

FH-BKG Fort Hood Background

Analytical Results

Sample ID: FH000-SB20412-13-96/4.0-6.0 (BKSB204) Sample Depth: 4.0-6.0 FT
Matrix: Soil Field Sample Type: Field Duplicate Collected: 12/13/96

Metals	Result	Detection Limit	Units	Qualifiers Lab	Qualifiers Data
Arsenic	3.2	0.38	MG/KG		
Barium	31.9	0.09	MG/KG		
Cadmium	0.05	0.05	MG/KG	U	U
Chromium	6.5	0.09	MG/KG		
Lead	7.1	0.16	MG/KG	EN	J
Mercury	0.04	0.04	MG/KG	U	U
Selenium	0.35	0.35	MG/KG	U	U
Silver	0.22	0.22	MG/KG	U	U

APPENDIX D

Fort Hood RFI Background Soil Boring Logs

HTRW DRILLING LOG

1. PROJECT: FORT HOOD RFI	DIVISION: FORT WORTH DIST.	INSTALLATION: FORT HOOD	SHEET 2 OF 2
2. LOCATION/STATION: FHBKG	10. SIZE AND TYPE OF BIT: 4¼" HSA		
3. DRILLING AGENCY: TERRA MAR	11. DATUM FOR ELEVATION SHOWN: NA		
4. HOLE NUMBER: FHBKG-SB102	12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50		
5. NAME OF DRILLER: BILL CHRISTOPHER	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL	14. TOTAL NUMBER OF CORE BOXES: NA		
7. THICKNESS OF OVERBURDEN: NA	15. GROUNDWATER ELEVATION: NA		
8. DEPTH DRILLED INTO ROCK	16. DATE HOLE	STARTED: 12-12-96	COMPLETED: 12-12-96
9. TOTAL DEPTH OF HOLE	17. ELEVATION TOP OF HOLE: NA		
	18. TOTAL CORE RECOVERY FOR HOLE: NA ____ PERCENT		

ELEVATION (1)	DEPTH (3)	LEGEND (4)	CLASSIFICATION OF MATERIALS (5)	% CORE RECOVERY (6)	BOX OR SAMPLE NO. (7)	REMARKS (8)
			(Upper 0.4 topso.l.) Silty clay, mottled 10YR5/3 brown and 10YR8/2 vy. pale brown, not plastic, firm, dry, weathered limestone fragments			BKSB121
	1.5					
	2.0		Same, dry			cuttings.
	3.5					
	4.0		tan, weathered limestone and silty clay interbeds, dry			cuttings
	6.0					
			Zones of limestone and highly indurated silty clay (weathered limestone?) very hard, shell fragments, roots, 2.5Y8/2 pale yellow, dry			
	8.0					
			Same, dry			cuttings
	9.0					
			Same, dry			

SIGNATURE OF INSPECTOR/DATE: [illegible] 12-17-96

PROJECT:

HOLE NO: FHBKG-SB102

SAC 1398 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG-SB102

INSPECTOR: J. DeVaughn SAIC

SHEET 2 OF 2 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Same, dry			cuttings
	12.0					
	14.0					
	14.5		Same, dry			BKSB122
			Same, dry			
	16.0					
			Blue-gray weathered limestone, dry			Geotechnical Sample
	17.0					
			Same, dry			
	18.0					cuttings
	19.0					
	19.5		Same, dry			BKSB123
	20.0		TD			

SIGNATURE OF INSPECTOR/DATE: J. DeVaughn 12-12-96

PROJECT

HOLE NO. FHBKG-SB102

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Ft. Worth Dist.	INSTALLATION: Fort Hood	SHEET	OF 2 SHEETS
1. PROJECT: Fort Hood 2F1	10. SIZE AND TYPE OF BIT: 4¼" HSA		
2. LOCATION/STATION: FHBKG	11. DATUM FOR ELEVATION SHOWN: N/A		
3. DRILLING AGENCY: TERRA MAR	12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50		
4. HOLE NUMBER: FHBKG-SB103	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: BILL CHRISTOPHER	14. TOTAL NUMBER OF CORE BOXES: NA		
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE	STARTED: 12-10-96	COMPLETED: 12-10-96
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE	18. TOTAL CORE RECOVERY FOR HOLE: NA ____ PERCENT		

ELEVATION (1)	DEPTH (2)	LEGEND (3)	CLASSIFICATION OF MATERIALS (4)	% CORE RECOVERY (5)	BOX OR SAMPLE NO. (6)	REMARKS (7)
	0.5		(Topsoil upper 0.2) weathered tan limestone			BKSB104
	2.0		Interbedded silty and pebbly clay, thin layers of 10YR8/4 vy. pale brown and 10YR3/2 vy. dk. grayish brown, 40% coarse sand to pebble sized angular to subrounded rock fragments, dry, mod. plastic			
	2.5					
	4.0		same, dry, no pebbles			cuttings
	4.5		same, weathered tan limestone fragments, dry			BKSB105
	6.0		same, dry, interbeds of limestone			
	8.0		same, dry			
	9.0					
	9.5		same, dry			BKSB106
			same, dry			

SIGNATURE OF INSPECTOR/DATE: [signature] 12-10-96

PROJECT:

HOLE NO.: FHBKG-SB103

SMC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FH3KG-SB1Ø3

INSPECTOR: Schwarm - AIC

SHEET 2 OF 2 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	10.5		Same, dry			cuttings
	12.Ø		Same except more medium to coarse sand, soft, not plastic, dry			
	14.Ø		Same, dry			cuttings
	15.Ø		Silty clay, mottled 10YR 6/2 v.v. pale brown and 10YR 6/4 H. yellowish brown, weathered limestone fragments, mod. plastic, damp, firm			BKSB1Ø7
	16.Ø		Blue-gray weathered limestone fragments			cuttings
	17.Ø		TD			
	18.Ø					
	2ØØ					

SIGNATURE OF INSPECTOR/DATE: 12-16-01

PROJECT

HOLE NO. FH3KG-SB1ØB

SMC 1996 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Fort Worth Dist.	INSTALLATION: Fort Hood	SHEET	SHEETS OF 3
1. PROJECT: Fort Hood RFI	10. SIZE AND TYPE OF BIT: 4¼" HSA		
2. LOCATION/STATION: FHBKG	11. DATUM FOR ELEVATION SHOWN: NA		
3. DRILLING AGENCY: TERRA UAR	12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50		
4. HOLE NUMBER: FHBKG-SB104	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
5. NAME OF DRILLER: Bill Christopher	14. TOTAL NUMBER OF CORE BOXES: NA		
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA		
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE	STARTED: 12-11-96	COMPLETED: 12-11-96
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE: NA		
9. TOTAL DEPTH OF HOLE: 24.0'	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT		

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
	1.0		Topsoil			BKSB108
	2.0		Silty clay, 2.5Y7/6 yellow, damp, low plasticity, trace organics, soft, weathered limestone fragments			
	4.0		same			cuttings
	5.0		same with 10YR7/8 yellow mottling, no organics, dry			BKSB109
	6.0		same, slightly more silty, brittle, hard, dry			cuttings
	8.0					
	9.0		tan, weathered limestone			hard drilling/ cuttings

SIGNATURE OF INSPECTOR/DATE: [signature] 12-11-96

PROJECT:

HOLE NO.: FHBKG-SB104

SAJC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER FHBKG-SB104

INSPECTOR [illegible], SAIC

SHEET 2 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			weathered limestone as above			cuttings
	11.0					
	11.5		silty clay as above, dry			BKSB110
	12.0		same, dry			cuttings
			same, dry			Geotechnical Sample
	13.0					
	14.0		silty clay and weathered limestone interbeds			cuttings.
	16.0					
	18.0					
	18.5		silty clay as above, dry			BKSB111
	20.0		silty clay and weathered limestone interbeds			cuttings

SIGNATURE OF INSPECTOR/DATE [illegible] 12-1-01

PROJECT

HOLE NO. FHBKG-SB104

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG SB104

INSPECTOR: E. Devaughn SAIC

SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			Same, dry			
	24.0					
			TD			
			Blue-gray weathered limestone fragments, dry			
	26.0					
	28.0					
	30.0					
	32.0					

SIGNATURE OF INSPECTOR/DATE: [illegible] 12-11-96

PROJECT

HOLE NO. FHBKG-SB104

SMC 1596 after ENG FORM 1836

HTRW DRILLING LOG

1. PROJECT: Fort Hood RFI	2. DIVISION: Fort Worth Dist.	3. INSTALLATION: Fort Hood	4. SHEET 1 OF 2 SHEETS
5. LOCATION/STATION: FHBKG	6. SIZE AND TYPE OF BIT: 4 1/4" HSA		
7. DRILLING AGENCY: TERRA AIR	8. DATUM FOR ELEVATION SHOWN: NA		
9. HOLE NUMBER: FHBKG-SB105	10. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50		
11. NAME OF DRILLER: BILL CHRISTOPHER	12. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED	UNDISTURBED
13. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL	14. TOTAL NUMBER OF CORE BOXES: NA		
15. THICKNESS OF OVERBURDEN: NA	16. GROUNDWATER ELEVATION: NA		
17. DEPTH DRILLED INTO ROCK	18. DATE HOLE	STARTED: 12-11-96	COMPLETED: 12-11-96
19. TOTAL DEPTH OF HOLE: 24.0'	20. ELEVATION TOP OF HOLE: NA		
	21. TOTAL CORE RECOVERY FOR HOLE: NA ____ PERCENT		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			Gravel (graded area)			cuttings
	1.0					
	1.5		Silty clay, 2.5Y6/4 lt. yellowish brown, firm not plastic, dry, weathered limestone fragments			BKSB112
	2.0		Same, dry			cuttings
	4.0					
			Fat mottled clay, 2.5Y6/4 lt. yellowish brown and 10YR6/6 brownish yellow, high plastic, dry, firm			BKSB113
	5.0					
	6.0		same as above except more silty clay, limestone interbeds, dry			cuttings
	8.0					

SIGNATURE OF INSPECTOR/DATE: [signature] 12-11-96

PROJECT:

HOLE NO.: FHBKG-SB105

S/C 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG-SB105

INSPECTOR: E. DeVaughn, SAIC

SHEET ___ OF ___ SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Same, dry			cuttings
	11.0					
			Same, mod. plastic, dry			BKSB114
	12.0					
			Same, dry			cuttings
	14.0					
	15.0					
	15.5		Same with more silt, brittle, dry, hard, not plastic			BKSB115
	16.0					
			Same with weathered limestone interbeds			
	18.0					cuttings
	20.0					

SIGNATURE OF INSPECTOR/DATE: E. DeVaughn 12-11-96

PROJECT

HOLE NO. FHBKG-SB105

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER FHKG-SB105

INSPECTOR C. Delinquin SAIC

SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	22.5		Same...cm			3KSB116
	24.0		Same, dm			cuttings
			TD			
			Blue-gray weathered mudstone, dm, hard drilling to 24.0			
	26.0					
	28.0					
	30.0					
	32.0					

SIGNATURE OF INSPECTOR/DATE 12-11-06

PROJECT

HOLE NO. FHKG-SB105

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG

1. PROJECT: Fort Hood IRP	2. DIVISION: Fort Worth Dist.	3. INSTALLATION: Fort Hood	4. SHEET 3 OF 3 SHEETS
5. LOCATION/STATION: FHBKG		10. SIZE AND TYPE OF BIT: 4 1/4" HSA	
6. DRILLING AGENCY: EZRA NAR		11. DATUM FOR ELEVATION SHOWN: NA	
7. HOLE NUMBER: FHBKG-SB106		12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50	
8. NAME OF DRILLER: Bill CHRISTOPHER		13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA	DISTURBED: / UNDISTURBED:
9. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEGREES FROM VERTICAL		14. TOTAL NUMBER OF CORE BOXES: NA	
10. THICKNESS OF OVERBURDEN: NA		15. GROUNDWATER ELEVATION: NA	
11. DEPTH DRILLED INTO ROCK:		16. DATE HOLE	STARTED: 12-12-96 / COMPLETED: 12-12-96
12. TOTAL DEPTH OF HOLE: 25.5'		17. ELEVATION TOP OF HOLE: NA	
		18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT	

ELEVATION (1)	DEPTH (2)	LEGEND (3)	CLASSIFICATION OF MATERIALS (4)	% CORE RECOVERY (5)	BOX OR SAMPLE NO. (6)	REMARKS (7)
	1.0		Silty clay, mottled 2.5Y7/6 yellow and 10YR6/6 brownish yellow, dry, firm, not plastic, weathered limestone fragments			BKSB117
	2.0		same, dry			
	3.0					
	4.0		same, dry			Geotechnical Sample
	6.0		same with weathered limestone interbeds			cuttings
	7.0					
	8.0		same with trace fine sand, dry			
	9.0					
	9.5		Silty fine sand, 2.5Y8/4 pale yellow, dry, carbonate (HCl fizz), not plastic			BKSB118
			same, dry			

SIGNATURE OF INSPECTOR/DATE: [signature] 12-12-96

PROJECT:

HOLE NO: FHBKG-SB106

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: CHRKG-SB106

INSPECTOR: C. Devaughn SAIC

SHEET 2 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			same, dry			cuttings
	12.0					
			same except color change to 10YR 8/2 vy. pale brown			cuttings
	14.0					
	14.5		same as above fine sand except no silt			BKSB119
			same, dry			cuttings
	16.0					
	18.0					
	19.0					
			fine sand, 2.5Y 8/4 pale yellow, non carbonate, soft, dry			BKSB120
	20.0					
			same, dry			cuttings

SIGNATURE OF INSPECTOR/DATE: C. Devaughn 12-12-96

PROJECT

HOLE NO. CHRKG-SB106

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHRKG-SB106

INSPECTOR: J. Devoucoux, SAIC

SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Same, am			cuttings
	23.0					
			-am weathered limestone, lay			
	24.0					cuttings
	25.5					
			TD			
	26.0		Blue-gray weathered limestone, am			
	28.0					
	30.0					
	32.0					

SIGNATURE OF INSPECTOR/DATE: 12-12-96

PROJECT

HOLE NO. FHRKG-SB106

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Fort Worth Dist. | INSTALLATION: Fort Hood | SHEET ___ OF ___ SHEETS

1. PROJECT: Fort Hood ZFI	10. SIZE AND TYPE OF BIT: 4¼" HSA
2. LOCATION/STATION: FHBKG	11. DATUM FOR ELEVATION SHOWN: NA
3. DRILLING AGENCY: TEREA YAR	12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50
4. HOLE NUMBER: FHBKG-SB107	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA; DISTURBED: ; UNDISTURBED:
5. NAME OF DRILLER: BILL CHRISTOPHER	14. TOTAL NUMBER OF CORE BOXES: NA
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE: STARTED 12-12-96; COMPLETED 12-12-96
8. DEPTH DRILLED INTO ROCK:	17. ELEVATION TOP OF HOLE: NA
9. TOTAL DEPTH OF HOLE: 6.0'	18. TOTAL CORE RECOVERY FOR HOLE: NA ___ PERCENT

ELEVATION (1)	DEPTH (2)	LEGEND (3)	CLASSIFICATION OF MATERIALS (4)	% CORE RECOVERY (5)	BOX OR SAMPLE NO. (6)	REMARKS (7)
	1.0		Silty clay, mottled 10YR 6/8 brownish yellow and 10YR 6/2 lt. brownish gray, wet, not plastic, dry, weathered limestone fragments			BKSB124
	1.7		Same			
	2.0		Blue-gray weathered limestone, 2.5Y 6/1 gray, fossiliferous			cuttings
	4.0					
	4.5		Same			BKSB125
	5.5		Same			cuttings
	6.0		Same			BKSB126
			TD			
	8.0					

SIGNATURE OF INSPECTOR/DATE: [signature] 12-12-96 | PROJECT: | HOLE NO: FHBKG-SB107

SAIC 1996 and ENG FORM 1836

TRW DRILLING LOG

PROJECT: Fort Hood RFI	Fort Hood
LOCATION/STATION: FHBKG	DRILLING METHOD: 4¼" HSA
DRILLING CONTRACTOR: TERRA MAR	DRILLING FLUID/ADDITIVES: NA
DRILL NUMBER: FHBKG-SB108	DRILL MAKE/MODEL: MOBILE B-50
NAME OF DRILLER: Bill Christopher	TOTAL NUMBER OF CORE BOXES: NA
DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEGREES FROM VERTICAL	GROUNDWATER ELEVATION: NA
THICKNESS OF OVERBURDEN: NA	DATE HOLE: STARTED 1-14-97 COMPLETED 1-14-97
DEPTH DRILLED INTO ROCK:	ELEVATION TOP OF HOLE: NA
TOTAL DEPTH OF HOLE: 17.0	TOTAL CORE RECOVERY FOR HOLE: NA %

ELEVATION	DEPTH	LEGEND	GEOLOGIC DESCRIPTION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	1.0		Upper 0.4 topsoil. Silty clay, 5YR6/6 brown, weathered limestone fragments, firm, moist, dry			BKSB135
	2.0		Same, dry			
	3.0					
	4.0		Same, dry			cuttings
	5.0					
	5.5		Same, mottled with 2.5Y7/3 pale yellow, dry			BKSB136
	6.0		Same, dry			
	7.0					
	8.0		Same, dry			cuttings
	9.0					
	9.5		Same, dry			BKSB137
	10		Same, dry			cuttings

SIGNATURE OF PERSON PREPARING: [signature] 1-14-97

PROJECT: Ft. Hood RFI

HOLE NO.: FHBKG-SB108

GAIQ/1000 after END FORM 1036

TRW DRILLING LOG (continued)

PROJECT: H. Hood RFI

HOLE NUMBER: H-BKG-SB108

LOCATION: Bingham Site

SHEET 2 OF 2

DEPTH	ASSIGNED SOIL/ROCK MATERIAL	% RECOVERY	TYPE OR SAMPLE NO.	REMARKS
	Same, dry			
				Cuttings
2.0				
4.0				
14.5	Same, less silty, dry			
				BKSB13B
15.0	Same, dry			
	Blue-gray weathered limestone			
16.0				
16.5				
17.0	Same, dry			
	TD			BKSB139
8.0				
20.0				

SIGNATURE OF INSPECTOR/DATE: [illegible] 1-14-97

PROJECT: H. Hood RFI

HOLE NO.: H-BKG-SB108

SAIC/1038 after ENG FORM 1836

DRILLING LOG

Fort Worth Dist. Fort Hood

Sheet 3 of 3

Fort Hood RFI

FHBKG

TERRA MAR

FHBKG-SB109

BILL CHRISTOPHER

☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL

NA

NA

NA

NA

NA

NA

NA

NA

24.0

ELEVATION	DEPTH	LOG	DESCRIPTION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	1.0		Silty clay 5YR 2.5/1 black, slightly plastic, damp, trace roots, trace angular to subrounded rock fragments <1 cm			BKSB140
	2.0		Same, damp			
	3.0					
	4.0		Same, damp			cuttings
	5.0		Same, damp			BKSB141
	6.0		Same, damp			
	7.0		Silty clay - 5YR 6/4 lt. brown, not plastic, dry, trace weathered limestone fragments, stiff, some fine sand from 8.9' bag.			
	8.0					
	9.0		Same, dry			BKSB142

SIGNATURE OF INSPECTOR/DATE: J. Waylon 1-15-97

PROJECT: Ft Hood RFI

HOLE NO.: FHBKG-SB109

SAIC 1000/Alter ENG FORM 1836

HTRW DRILLING LOG continued

PROJECT: Hood RFI

HOLE NUMBER: HBKG-SB109

INSPECTOR: [illegible]

SHEET 2 OF 3

ELEVATION	DEPTH	LEGEND	DESCRIPTION OF MATERIALS	SCORE RECOVERY	BLOW COUNTS	SAMPLE NO.	REMARKS
	0		Same [illegible] rock fragments [illegible] limestone, up to 20% [illegible]				
	2.0						
	13.0		Same [illegible]				cuttings
	14.5		[illegible]				
	15.0		Same, and, with limestone frags up to 40%, also 2% lime sand				BKSB143
	16.0		Same, [illegible]				
	18.0						
	19.0						
	19.3		Same, [illegible]				
	20.0		Same, [illegible]				BKSB144
							cuttings

SIGNATURE OF INSPECTOR/DATE: [illegible] 1-15-97

PROJECT: Hood RFI

HOLE NO: HBKG-SB109

SAC 1039 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT: Fort Hood RFI

HOLE NUMBER: FHBKG-SB109

INSPECTOR: J. Devaughn SAIC

SHEET 3 OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			same as			continues
	22.0					
			Silty fine to med. sand, moderate 7.5YR 6/6 reddish yellow and 7.5YR 7/1 gray, [illegible] moist, soft			
	24.0					
			TD			water in hole, attempted sample, no recovery (in gravel at ≈24 bgs)
	26.0					
	28.0					
	30.0					
	32.0					

SIGNATURE OF INSPECTOR/DATE: J. Devaughn 1-15-09

PROJECT: Ft. Hood RFI

HOLE NO.: FHBKG-SB109

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG

DIVISION: Fort Worth Dist
INSTALLATION: Fort Hood
SHEET 1 OF 1 SHEETS

1. PROJECT: FORT HOOD IF	10. SIZE AND TYPE OF BIT: 4¼" HSA
2. LOCATION/STATION: FHBKG	11. DATUM FOR ELEVATION SHOWN: NA
3. DRILLING AGENCY: TERRA MAR	12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-50
4. HOLE NUMBER: FHBKG-SB110	13. TOTAL NUMBER OF OVERBURDEN SAMPLES TAKEN: NA — DISTURBED: — UNDISTURBED: —
5. NAME OF DRILLER: BILL CHRISTOPHER	14. TOTAL NUMBER OF CORE BOXES: NA
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEGREES FROM VERTICAL	15. GROUNDWATER ELEVATION: NA
7. THICKNESS OF OVERBURDEN: NA	16. DATE HOLE — STARTED: 12-13-96 — COMPLETED: 12-13-96
8. DEPTH DRILLED INTO ROCK:	17. ELEVATION TOP OF HOLE: NA
9. TOTAL DEPTH OF HOLE: 34.5	18. TOTAL CORE RECOVERY FOR HOLE: NA ____ PERCENT

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (g)
	1.0		Sand, 7.5YR5/6 strong brown, fine to medium with some silt, soft, damp, not plastic			BKSB127
	2.0		same, damp to moist			
	3.0		Clayey sand, 2.5YR4/6 red, mod plastic, firm, damp			
	4.0		same, damp			BKSB128
	6.0		same, damp			
	8.0		same, damp			Geotechnical Sample
			same, damp			

SIGNATURE OF INSPECTOR/DATE: [signature] 12-13-96
PROJECT:
HOLE NO.: FHBKG-SB110

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG-SB110

INSPECTOR: J. DeVaughn, SAIC

SHEET 2 OF 4

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	10.0		same, slightly less clay, dry			BKSB129
	11.0		same, dry			
	12.0					
	14.0		same, color now 5YR5/6 yellowish red, dry, less clay			
	15.0		same, dry			BKSB130
	16.0		same, dry			
	18.0		same, more clay, dry			
	19.5		Silty clay, trace sand, 7.5YR6/6 reddish yellow, hard, dry, trace tan weathered limestone fragments <1 cm			
	20.0		same, dry			BKSB131
	21.0		same, dry			

SIGNATURE OF INSPECTOR/DATE: J. DeVaughn 12-13-96

PROJECT

HOLE NO. FHBKG-SB110

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG-SB110

INSPECTOR: J. DeVaughn SAIC

SHEET 3 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	24.0		Same, dry			
	25.0		Same, dry			3KSB132
	26.0		Same, dry			
	28.0					
	29.0		Same with more silt, moist, softer			
	30.0		same except very silty, soft, damp			3KSB133
	31.0		Same, damp			
	32.0					
	33.0		Silty fine sand, trace gravel and coarse sand at bottom, saturated, not plastic, 7.5YR6/6 reddish yellow			

SIGNATURE OF INSPECTOR/DATE: J. DeVaughn 12-13-91

PROJECT

HOLE NO. FHBKG-SB110

SAIC 1996 after ENG FORM 1836

HTRW DRILLING LOG (continued)

PROJECT

HOLE NUMBER: FHBKG-SB110

INSPECTOR: J. DeVaughn SAIC

SHEET 4 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	34.0		Coarse sand, poorly graded gravel, angular to round, saturated, 1.5 water in hole.			3KSB134
	34.5		TD			

SIGNATURE OF INSPECTOR/DATE: A. Williams 12-12-96

PROJECT

HOLE NO. FHBKG-SB110

SAIC 1996 after ENG FORM 1836

APPENDIX E

FH-051 Screening Results

Summary of Detected Analytical Results, Detection Limits, and Screening Criteria for FH-051 Samples										
Location	**Sample ID**	**Depth**	**Parameter**	**Results**		**Detection Limit**	**Units**	**Screening Criteria**	**Screening Value**	**Units**
PIT	51SB133	3.0-3.5	Silver	0.42	B	0.14	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg
SB101	51SB109	0.0-1.0	Silver	3.6		0.21	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg
SB102	51SB107	0.0-1.0	Silver	6.3		0.23	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg
SB103	51SB105	0.0-1.0	Silver	5		0.24	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg
SB104	51SB103	0.0-1.0	Silver	1.3		0.21	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg
SB105	51SB101	0.0-1.0	Silver	0.48	B	0.23	mg/kg	30 TAC 335 Industrial Soil	51.1	mg/kg

Summary of Detected Analytical Results, Detection Limits, and Residential Migration to Groundwater Screening Criteria for FH-051 Samples										
Location	**Sample ID**	**Depth**	**Parameter**	**Results**		**Detection Limit**	**Units**	**Screening Criteria**	**Screening Value**	**Units**
PIT	51SB133	3.0-3.5	Silver	0.42	B	0.14	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg
SB101	51SB109	0.0-1.0	Silver	3.6		0.21	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg
SB102	51SB107	0.0-1.0	Silver	6.3		0.23	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg
SB103	51SB105	0.0-1.0	Silver	5		0.24	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg
SB104	51SB103	0.0-1.0	Silver	1.3		0.21	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg
SB105	51SB101	0.0-1.0	Silver	0.48	B	0.23	mg/kg	30 TAC 335 Res. Soil GWP	18.3	mg/kg