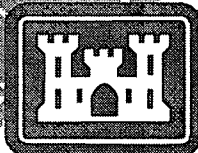


**Draft Final
Report
Former Landfill / Incinerator Sites (Group 4)
Expanded Site Investigation
(Multiple Sites)
at
Fort Riley, Kansas**

October 16, 2007

Prepared for



U.S. Army Corps of Engineers
Kansas City District

Prepared by

**MALCOLM
PIRNIE**



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List of Acronyms and Abbreviations

AEHA	Army Environmental Hygiene Agency
BMcD	Burns & McDonnell Engineering Company, Inc.
bgs	below ground surface
C/D	Construction/Demolition
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DA	Department of the Army
DAF	Dilution Attenuation Factor
1,2-DCA	1,2-dichloroethane
DCE	Dichloroethene
4,4'-DDT	4,4'-dichlorodiphenyltrichloroethane
ESI	Expanded Site Investigation
FFA	Federal Facility Agreement
ft	feet
HRS	Hazard Ranking System
IACH	Irwin Army Community Hospital
IDWPA	Investigative-Derived Waste Management Plan
in	inches
IRP	Installation Restoration Program
IT	International Technology Corporation
IW-IDW	Installation-Wide Investigative-Derived Waste
IWSA	<i>Installation-Wide Site Assessment for Fort Riley, Kansas</i>
KAL	Kansas Action Limits
KDHE	Kansas Department of Health and the Environment
LBA	Louis Berger and Associates
MAAF	Marshall Army Airfield
MCL	Maximum Contaminant Level
MP	Malcolm Pirnie, Inc.
µg/kg	micrograms per kilograms
µg/L	micrograms per liter
µg/100cm ²	micrograms per 100 square centimeters
mg/kg	milligram per kilogram
mg/L	milligram per liter
NCP	National Contingency Plan
NPL	National Priorities List
PA	Preliminary Assessments
PAOC	Potential Area of Concern
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
POL	Petroleum, Oil, and Lubricant
PRG	Preliminary Remediation Goals
PWE	Directorate of Public Works – Environmental Division

List of Acronyms and Abbreviations

QCSR	Quality Control Summary Report
RCRA	Resource Conservation and Recovery Act
RSK	Risk-Based Standards for Kansas
SAP	Sampling and Analysis Plan
SEFL	Southeast Funston Landfill
SHP	Safety and Health Plan
SI	Site Investigation
SSHP	Site-Specific Safety and Health Plan
SVOC	Semivolatile organic compound
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VC	Vinyl Chloride
VOC	Volatile Organic Compound
WTC	World Trade Center

1.0 INTRODUCTION

1.1 PURPOSE OF EXPANDED SITE INVESTIGATION (ESI) REPORT

The Fort Riley Directorate of Public Works – Environmental Division (PWE) is performing the Installation Restoration Program (IRP) at Fort Riley, Kansas. This program, designed to identify and address potential threats to human health and the environment, has been underway for several years at the post. Numerous investigations, pilot studies, and environmental sampling events have been conducted by the United States Army Corps of Engineers (USACE) at several sites on the post to support the IRP effort.

Upon review of the public record, Fort Riley has determined that multiple potentially contaminated sites identified during previous investigations have not had a formal decision on their regulatory status signed by the parties to the Federal Facility Agreement (FFA). These multiple sites have been organized into five groups based on similar site characteristics or contaminants as indicated below:

- Pesticide / Polychlorinated Biphenyl (PCB) Sites
- Wastewater Sites
- Petroleum / Volatile Organic Compounds (VOC) Sites
- Former Landfill / Incinerator Sites
- Former Vehicle Maintenance Shops / Gas Stations / Petroleum Dispensing Stations
(collectively referred to as the Former Petroleum, Oil, and Lubricant [POL] Sites)

Table 1-1 presents a summary of the regulatory history for all of the sites investigated by group and includes the recommendation made for closed status. Any proposal for additional sampling is also presented, if applicable.

This ESI report presents the field results and recommendation for the following Former Landfills / Incinerator Sites (Figure 1-1):

- Whitside C/D Landfill (FTRI-002)
- Main Post Landfill (FTRI-004)
- Custer Hill Rubble Dump (FTRI-005)
- Hospital Incinerator – Irwin Army Community Hospital (IACH) (FTRI-014)
- Southeast Funston Landfill (SEFL) Incinerator (FTRI-029)
- SEFL (FTRI-036)

- Old Whitside Incinerator (FTRI-037)
- Inactive Landfills – Camp Whitside (FTRI-052)

This report includes a complete summary of all previous investigative work conducted at each of the Former Landfills / Incinerator Sites, as well as the results of field work completed as part of the ESI. The evaluation includes a critical analysis of the new data with respect to the historical data. The analysis considers whether or not the new data are consistent with the historical data and includes possible explanations for any variance observed. A recommendation on the determination of the future status of each of the Former Landfills / Incinerator Sites is made.

Malcolm Pirnie, Inc. (MP) has a contract with the USACE to conduct this investigation. MP has subcontracted Burns & McDonnell Engineering Company, Inc. (BMcD) to prepare work plan documents, execute the field work, and prepare the ESI Reports.

The following installation-wide documents provided general guidance for conducting ESI field activities during the summer of 2006:

- *Installation-Wide Sampling and Analysis Plan for Environmental Investigations at Fort Riley, Kansas* (MP-BMcD, 2004a), which consists of the following two volumes:
 - *Volume I, Installation-Wide Field Sampling Plan*
 - *Volume II, Installation-Wide Quality Assurance Project Plan*
- *Installation-Wide Site Safety and Health Plan for Environmental Investigations at Fort Riley, Kansas* (MP-BMcD, 2004b)
- *Installation-Wide Investigative-Derived Waste Management Plan for Environmental Investigations, Fort Riley, Kansas* (BMcD, 2003a)

The following project specific plan addenda were prepared specifically to support ESI field activities and data validation:

- *Sampling and Analysis Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas* (MP-BMcD, 2006a), which consists of the following two volumes:
 - *Volume I, Field Sampling Plan Addendum*
 - *Volume II, Quality Assurance Project Plan*

- *Site-Specific Safety and Health Plan, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (MP-BMcD,2006b)*
- *Investigative-Derived Waste Management Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (MP-BMcD, 2006c)*

1.2 SITE DESCRIPTION

General site conditions, including the physical setting, surface features, ecology, geology and hydrogeology, and climate have been summarized in the Installation-Wide Field Sampling Plan. Conditions specific to each ESI site are addressed in the individual site discussions.

1.3 REGULATORY HISTORY

Fort Riley was established in 1853 and has been owned and operated by the United States Department of the Army (DA) since that time. Environmental investigations and sampling events were performed at Fort Riley during the 1970s and 1980s. These investigations identified activities and facilities where hazardous substances had been released or had the potential to be released to the environment. Potential sources of contamination include a variety of landfills; printing, dry cleaning, and furniture shops; POL sites; and pesticide storage facilities. On July 14, 1989, the United States Environmental Protection Agency (USEPA) proposed inclusion of Fort Riley on the National Priorities List (NPL), and listed the installation on the USEPA NPL in August 1990, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The DA – Fort Riley, the Kansas Department of Health and the Environment (KDHE) and the USEPA entered into a FFA, to address environmental releases subject to Resource Compensation and Recovery Act (RCRA) and CERCLA or CERCLA alone.

The FFA, which became effective in June 1991, required Fort Riley to conduct a systematic site assessment to identify all potential areas of concern (PAOCs) at Fort Riley. The systematic site assessment was performed in 1992, with the results presented in the *Installation-Wide Site Assessment for Fort Riley, Kansas (IWSA)* dated 07 December 1992 and revised on 16 February 1993 (Louis Berger and Associates [LBA], 1993). The IWSA summarized existing data and identified 25 groups of PAOCs, with 23 sites being identified for further site investigation. Contaminants associated with these sites vary greatly from potential lead-contaminated soils at old firing ranges to potential releases of solvents due to practices at furniture repair shops. The IWSA was conducted consistent with the USEPA requirements for Preliminary Assessments (PA) under CERCLA. Based on USEPA's preliminary assessment (PA) method, potential risk posed by PAOCs was estimated using the Hazard Ranking System (HRS). The IWSA identified PAOCs subject to RCRA corrective actions and/or CERCLA where a release of

hazardous substances to the environment has occurred or is considered likely, migration pathways from the site exist, and potential receptors are known to exist. Specifically, 23 PAOCs were identified and evaluated using the HRS PA score method. As outlined in the National Contingency Plan (NCP), the results of the PA were used to identify sites requiring further investigation.

These PAOCs were addressed under a Multiple Site Investigations project which was further broken down into these groupings: the Sensitive Receptor Lead Sites; “High Priority” Sites; and “Other Sites”. The Sensitive Receptor Lead Sites investigation was expedited due to the accessibility of the areas to the general public (especially children). Only one area near the Coyler Manor Family Housing Area was identified as having elevated levels of lead in the soils, a removal action involving excavation and off-site disposal of soil was performed. The High Priority Sites field investigations were completed in November, 1993. The “Other Sites” grouping consisted of 14 sites which had very low PA HRS scores and had a low potential for release of contaminants to the environment. Field work for these “Other” sites was performed in the spring and summer of 1994. Site investigations for seven POL/underground storage tank (UST) sites were conducted from 1992 to 1995.

Fort Riley has a RCRA Part B permit that became effective October 1, 1998 and expires October 1, 2008. Part I of the permit allows Fort Riley to operate as a storage facility for hazardous waste. Part II of the permit defers corrective action requirements to those conditions specified in the Fort Riley FFA.

The permit states that the Installation-Wide Site Assessment and subsequent modifications thereto, shall constitute the identification of all known past and present sites/solid waste management units (SWMUs), effective with the issuance of Part II of the permit. Table 2.2 of the permit lists sites/SWMUs covered under the FFA and their current status (revised October 2000). The current status of the ESI sites/groupings listed in the permit are determined to not have the potential to pose a risk to human health or the environment. Although the RCRA permit states these sites pose no potential risk, the regulatory status under CERCLA is currently open; i.e., the sites have not received regulatory concurrence to terminate further response activities or to initiate a removal or to proceed to the next phase under CERCLA for a remedial investigation, if warranted.

1.4 RATIONALE AND TECHNICAL APPROACH

The objective of this ESI was to provide a defensible rationale for ending environmental investigations at the identified ESI sites, if that decision was supported by data. In the event that closed status was not indicated by the data, then future work required for closed status was proposed. This was accomplished using a three step process:

- Documents were reviewed in late 2005 to determine if existing data were sufficient to support a recommendation for the future status of a site. If not sufficient, then data gaps were identified and additional fieldwork was planned. ESI sampling parameters were selected by Fort Riley.
- The project workplan was prepared (MP-BMcD, 2006d). This document presented the rationale for the collection of samples at each location and was approved by the regulatory agencies.
- Additional field sampling was conducted during the summer of 2006. Samples collected included surface and subsurface soil samples, groundwater samples, debris samples, and wipe samples. All results were validated and a Quality Control Summary Report (QCSR) was issued (MP-BMcD, 2006e).
- The data were evaluated and an ESI Report was prepared. Data collected as part of the ESI were compared to existing risk-based screening criteria. This process is described in the following section. See Section 1.6 for a description of the ESI Report organization.

1.5 RISK-BASED SCREENING CRITERIA

Field data were screened against existing risk-based screening criteria in order to determine if contaminants detected in soil or groundwater present a hazard to potential receptors. No effort was made to perform a formal risk assessment for any of the ESI sites. The screening process was developed in collaboration with Fort Riley and is described in the following bullets:

- Data were screened initially against USEPA Region 9 Preliminary Remediation Goals (PRGs) (USEPA, 2004a). These are risk-based standards and are more stringent than other regulatory standards available. For soil, the residential PRGs were used initially. For groundwater, the tap water PRGs were applied. If leaching to groundwater appeared to be a potential issue, then the soil data were screened against the dilution attenuation factor (DAF) 20 standards for “migration to groundwater.”
- If soil at a site failed screening against the Region 9 residential PRGs, then the industrial PRGs were applied, assuming their use was justified based on current and/or future use of the site.

- If groundwater at a site failed screening against the tap water PRGs, then the USEPA Maximum Contaminant Levels (MCLs) (USEPA, 2004b) were applied.
- If soil failed screening against both residential and industrial PRGs, then the KDHE Risk-Based Standards for Kansas (RSK) screening standards (KDHE, 2003) were applied.
- If soil and/or groundwater failed screening against all regulatory standards, then an effort was made to justify closed status based on the lack of completed pathways to potential receptors. This was a qualitative assessment; no formal risk assessment was performed.

In the event that a recommendation for closed status could not be made, then recommendations were made for additional work at that location.

1.6 ESI REPORT ORGANIZATION

Each section of this ESI Report (Sections 2 through 9) consists of individual, stand alone descriptions of each site. Each discussion includes the following elements:

- Location and Setting – a brief description of the physical location of the site, including the nature of the surrounding area. A description of geology and hydrogeology is included. Any protected or special ecological and cultural features observed or known to occur at or near the site is described. Any significant receptors, especially water supply wells, are also described.
- Site Background and Previous Sampling Results – This section includes a brief history of the site. Also discussed are any previous site investigation activities and a discussion of analytical results from those activities.
- ESI Field Activities and Analytical Results – Significant observations which drive the sampling rationale are listed. The field activities are described in detail. A figure and table are provided showing the locations where samples were collected and listing the sampling media and analytes.
- Discussion and Recommendations – This section provides a discussion of both previous and ESI sampling results. Any anomalies in the data sets are described and explained, if possible. Based on a comparison of analytical data to screening criteria, a recommendation for closed status is made. If closed status is not indicated, then a recommendation for additional work is made.

This ESI Report, which addresses only the Former Landfills / Incinerator Sites, is organized as follows:

- Section 1.0 Introduction
- Section 2.0 Whitside C/D Landfill (FTRI-002)
- Section 3.0 Main Post Landfill (FTRI-004)
- Section 4.0 Custer Hill Rubble Dump (FTRI-005)
- Section 5.0 Hospital Incinerator – IACH (FTRI-014)
- Section 6.0 SEFL Incinerator (FTRI-029)
- Section 7.0 SEFL (FTRI-036)
- Section 8.0 Old Whitside Incinerator (FTRI-037)
- Section 9.0 Inactive Landfills – Camp Whitside (FTRI-052)
- Section 10.0 References

Additional reports will address the other four groups of ESI sites.

* * * * *

2.0 WHITSIDE C/D LANDFILL (FTRI-002)

2.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Whitside Construction/Demolition (C/D) Landfill is located north of Camp Whitside and is approximately 1,500 ft west of the Inactive Landfill (Figures 1-1 and 2-1). This landfill occupies a former quarry and has been closed. There are no permanent manmade structures on or within the C/D Landfill. Access to the site is restricted by locked gates on the two access roads to the site; however, the perimeter of the site is unfenced.

The C/D Landfill is located in the upland area, just north of the floodplain of the Kansas River. This area is underlain with interbedded limestone and shale. However, the C/D Landfill extends from the upland areas to the alluvial plain deposits, particularly along the southwestern boundary. Therefore, unconsolidated alluvial deposits (silts, sands, and gravels) and unconsolidated weathered bedrock underlie portions of the C/D Landfill. Outside the southern boundaries of the C/D Landfill, the unconsolidated materials approach thicknesses of 30 feet (ft) prior to encountering bedrock.

The types of soils located around the perimeter of the C/D Landfill to the west, south, and east consist of the Stony steep loam and the Breaks-Alluvial land complex. Both of these soil types are well-drained with the Breaks-Alluvial land complex occurring along the two intermittent drainage pathways, one leading away from the C/D Landfill to the west and one leading from between the two landfills to the south. There are no wetlands located on or adjacent to either landfill or along the intermittent drainage pathways leading from the landfills (LBA, 1995).

The uplands areas immediately surrounding the C/D Landfill are unused, open lands. Outside of the access road to the C/D Landfill, there are only dirt roads that traverse the site area. Based on observations during the SI, these dirt roads are rarely traveled. To the south of the bluffs forming the southern boundary for both landfills, the alluvial plain consists of open, grassy fields. The fields immediately south of the C/D Landfill, on either side of the access road to the C/D Landfill, are used for recreation. This area was formerly occupied by multi-use buildings of Camp Whitside. These buildings were demolished in the 1970s.

There are no surface water bodies near or adjacent to the site. The closest surface water is the Kansas River, which is located one-half mile to the southeast of the landfill. Intermittent drainages are located at the base of the uplands area and carry runoff toward the Kansas River.

The C/D Landfill is located in former limestone quarries. Bedrock is at or near the surface along the north, east, and southern portions of the C/D Landfill. Rain water at the site is expected to flow as runoff toward topographically lower areas and may infiltrate the shallow bedrock materials. At the C/D Landfill, runoff from within the quarry is expected to move toward the western edge, which is lower in elevation than the remainder of the landfill. Rain water will also infiltrate the subsurface. The infiltrating groundwater would encounter one of the many shale layers in bedrock and move laterally. Some of this may emerge from seeps at the low side of the fill areas, while some likely moves laterally into the limestones.

Two intermittent drainages are associated with the C/D Landfill – one to the west of the C/D Landfill and one between the C/D Landfill and the Inactive Landfill. These drainages are expected to carry water that has runoff directly from the landfill surfaces and water that has infiltrated bedrock, migrated laterally, and been discharged along the slopes or at the base of the upland, bedrock formations.

According to information provided by Fort Riley, there is a drainage that was created by excavation of material during World War II. This drainage lies to the east side of the C/D landfill and west of the Inactive Landfill, and leads to a manmade drainage ditch that leads under Huebner Road and out toward the Kansas River. The site is outside the 500-year floodplain.

No protected or special ecological or cultural features were observed or are known to occur at or near this Site. Current and future land use at this location, based on the post environmental overlay, is anticipated to be open space.

There are no water supply wells in the vicinity of the C/D Landfill Site. The Fort Riley water supply well field is located approximately two miles southwest of the Site. The municipal supply wells for the city of Ogden are located approximately 3 ½ miles northeast of the Site.

2.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

Opening around 1980, the C/D landfill was established to receive construction and demolition debris. The landfill operated as an uncontrolled landfill for four years before being turned over to a private contractor in 1986. Generally, the wastes from building demolition and cleanup operations on the post were disposed in this landfill. Based on calculations from landfill operations between 1984 and 1994, the C/D Landfill received approximately 50,000 cubic yards of construction and demolition waste each year. Materials disposed in this landfill consisted primarily of traditional construction and demolition debris such as wood, concrete, and metal, as well as smaller items such as appliances, drums (non-hazardous waste or empty), and organic/vegetative wastes. The extent of the landfill at its planned capacity occupies

approximately 17 acres. The northwestern corner of the landfill was designated for disposal of asbestos-containing building debris. The landfill has received non-hazardous, petroleum-contaminated soils for use as daily cover. No records were uncovered to indicate that hazardous wastes have been disposed at the site.

The C/D Landfill operated under the State of Kansas Permit #366 as a solid waste landfill under Subtitle D of RCRA. In 1982, the landfill caught fire. In 1988, the landfill was described as “poorly managed” (AEHA, 1988). That same year, the landfill caught fire again and was battled concurrently with a fire at the Inactive Landfill. After 12 months of efforts, the fire at the C/D Landfill was extinguished. At two locations, recurring seeps have been reported. One location was along the southern margin of the landfill, between the access road to the site and the landfill. The second was at a location near Building 634 where workers reported noxious odors associated with periodic seeps.

In January 1992, LBA observed a number of small metal containers (5-gallon drums) and concluded that dumping occurred after hours when no attendant was on duty. Although the landfill operators had attempted to manage waste allowed into the landfill in recent years, the apparent lack of strict controls at the landfill creates the potential that inappropriate waste has gotten into the landfill.

During June 1993, a seep oozing black material was observed by USEPA in the side of an active cell near the center of the C/D Landfill. Two analyses of the oozing material were performed, one for Toxicity Characteristic Leaching Procedure (TCLP) metals and one for VOCs. The leachate sample contained the following metals (TCLP extract): 1.4 milligrams per liter (mg/L) barium, 0.026 mg/L selenium, and 0.12 mg/L zinc. This sample also contained 28.8 micrograms per liter ($\mu\text{g/L}$) m- and p- xylene and 17.4 $\mu\text{g/L}$ o-xylene. The second leachate sample contained the following metals (TCLP extract) 0.014 mg/L arsenic, 0.8 mg/L barium, and 0.27 mg/L zinc. This sample did not contain any VOCs or semivolatile organic compounds (SVOCs). All the chemical concentrations were below the USEPA TCLP limits (LBA, 1995).

In March 1994, eight soil samples were collected from former and potential seep locations at the C/D Landfill; there were no detections of VOCs, PCBs, or herbicides in any of the samples. One SVOC, fluoranthene, was detected at one location at a concentration of 9,300 micrograms per kilogram ($\mu\text{g/kg}$) (Figure 2-2). Pesticides were detected at two locations: 4,4'-DDT was detected at one location at a concentration of 30 $\mu\text{g/kg}$, and dieldrin was detected at two locations at concentrations of 30 and 140 $\mu\text{g/kg}$ at one location and at a concentration of 7.3 $\mu\text{g/kg}$ at the other location. There were positive detections for eight of the priority pollutant metals in most of the samples. Metals detected include

arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc. For each metal, the range of detected concentrations were within one order of magnitude, and no location had consistently higher metals concentrations than the other samples. None of the SVOCs, pesticides, or metals detections exceeded state cleanup standards or the maximum USEPA Risk-Based Guidelines (LBA, 1995).

During the installation of the groundwater monitoring wells, grab groundwater samples were collected from the borings for Monitoring Wells WLF94-4A and WLF94-4B in March 1994. These samples were analyzed for VOCs, and the only detection was tetrachloromethane, which was detected at 2.6 µg/L in Monitoring Well WLF94-4B (the shallow well). Five groundwater monitoring wells outside the perimeter of the C/D Landfill were sampled in April 1994. There were no detections of pesticides, PCBs, or herbicides in any of the wells. Tetrachloromethane was detected at four locations at concentrations ranging from 1.1 to 3.3 µg/L; these detections occurred at all the wells downgradient of the C/D Landfill. The SVOC, bis(2-ethylhexyl)phthalate, was detected at a concentration of 43 µg/L in the upgradient well, so its presence was not attributed to the landfill (Figure 2-3). Metals were detected at only one location; the metals detected were chromium, lead, and zinc. The detections were well below drinking water standards. Since these metals were only detected in the upgradient well, their presence was not attributed to the landfill (LBA, 1995).

Six samples were collected from the intermittent drainages leading from the C/D Landfill in March 1994. None of the drainages around the periphery of the landfill were flowing at the time of sampling. Therefore, sediment samples were collected from within the drainage pathway. There were no detections of VOCs, SVOCs, PCBs, or herbicides in any of the sediment samples. Chlordane was detected at a concentration of 44 µg/kg, which is more than an order of magnitude below state cleanup standards and two orders of magnitude below the USEPA Risk-Based Guidelines. No other pesticides were detected. The metals detected were arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc. Along the drainage west of the C/D Landfill, the downgradient locations did not have any detections of metals that were more than three times those concentrations detected in the upgradient sample. For the drainage between the C/D Landfill and the Inactive Landfill, the detections for metals between sample locations did not vary by more than a factor of two for any metals. Of the metals detected, none exceeded the maximum concentrations of the USEPA Risk-Based Guidelines (LBA, 1995).

2.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Both soil and groundwater samples were collected at the C/D Landfill as part of the ESI fieldwork. Three soil borings were advanced on the south and west boundaries of the Site on August 7 and 8, 2006 (Figure 2-1). The work plan specified that direct-push equipment was to be used to advance these

borings; however, due to access problems, the borings were completed using hand auger equipment. Two soil samples were collected from Borings DP02 and DP03, at depths of 0 to 6 inches (in) and from 4 to 5 ft. At the location for Boring DP01, the field crew was unable to advance their boring deeper than 18 to 20 inches, despite offsetting several times. Only the shallow soil sample was collected at this location. These borings were logged by the field geologist. Boring logs are included in Appendix A. Soil samples were analyzed for fluoranthene (USEPA Method 8270) and pesticides (USEPA Method 8081A).

Following the completion of field activities at this site, all soil boring locations were surveyed. The survey data is included in Appendix B.

Groundwater samples were collected from Monitoring Wells WLF94-1B, WLF94-02, WLF94-03, and WLF94-4A on August 9 and 10, 2006. Samples were all collected using low-flow, minimum drawdown purging methods. Groundwater samples were analyzed for VOCs (USEPA Method 8260).

Soil sampling results are presented in Table 2-1. There were no detections of fluoranthene in any of the soil samples collected. Pesticides were detected in only one soil sample collected at the Site. Chlordane was present at a concentration of 0.031 milligrams per kilogram (mg/kg) in the surface soil sample collected at Boring DP02. This chlordane detection was below the USEPA Region 9 residential PRG of 1.6 mg/kg. This detection was also below the DAF 20 PRG for migration to groundwater of 1.0 mg/kg; however, it exceeded the KDHE RSK standard of 0.002 mg/kg for the soil to groundwater protection pathway (residential). This detection did not exceed the KDHE RSK standard of 48 mg/kg for the soil to groundwater protection pathway (industrial).

There were not detections of VOCs in any of the groundwater samples collected at the Site.

2.4 DISCUSSION AND RECOMMENDATIONS

Compounds detected in both historical and ESI sampling results were below applicable regulatory screening criteria. Based on these results, the Whitside C/D Landfill is recommended for closed status.

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3.0 MAIN POST LANDFILL (FTRI-004)

3.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The former Main Post Landfill Site is located south of Main Post, north of the Kansas River, and east of Henry Drive (Figures 1-1 and 3-1). The Site covers approximately 8.6 acres and is heavily vegetated with forest and brush. This area has elevations ranging from 1,050 to 1,066 ft above mean sea level, and 15 to 25 ft above the Kansas River. Access to the landfill area is via Marshall Avenue.

The Site lies on the alluvial floodplain of the Kansas River, and is underlain by approximately 70 ft of unconsolidated alluvial sediments. This material includes clay, silt, sand, and minor amounts of gravel. Groundwater is present at a depth of approximately 20 ft below ground surface (bgs). Groundwater flow is generally towards the east.

There is no established surface drainage across the former landfill site. The Kansas River is approximately 600 ft to the south of the Site, which lies on the 100-year floodplain. There is no levee between the Site and the Kansas River, so the area is prone to periodic flooding. This area was submerged during the 1993 floods.

As previously mentioned, the Site is heavily vegetated and lies within the 100-year floodplain of the Kansas River. This area is maintained as open space by the post and there are no plans to place permanent structures within this area. The former landfill area is not fenced.

The forested area in the vicinity of the Site is a protected winter habitat for bald eagles. A special cultural feature (historic landfill) is known to occur near the Site.

The nearest supply well is located at the west side of Marshall Army Airfield (MAAF), approximately 1 ½ miles south of the Site. In addition, there are several private supply wells located on the opposite side of the Kansas River, approximately 1 ½ miles east of the Site. The Kansas River acts as a hydrologic boundary for the alluvial aquifer system.

3.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The area south of the Main Post and north of the Kansas River has been used for the disposal of refuse over various periods from approximately 1880 until the 1950s, when the area was closed to open dumping. Occasionally household waste and debris have been discarded in the area by unknown persons not associated with the installation. Upon discovery, these wastes and debris are cleaned up by Fort Riley

personnel. Investigations have identified three separate areas of disposal: an area of historical disposal; an area with post-WW II disposal; and an area of recent surface disposal (LBA, 1995). The area of historical disposal was characterized as containing 19th century wastes, which are considered to be non-hazardous materials not posing a threat to groundwater. The area of recent disposal has been used for the dumping of non-hazardous waste, including soil, cleared brush, etc. The area used for post-WW II disposal was of the most concern because of the potential that this area received hazardous waste or wastes containing hazardous substances, which could leach to groundwater.

The landfill was identified as a SWMU and as an abandoned landfill in 1988 for the purpose of the Fort Riley Part B Permit Application list of SWMUs. No recommendations for sampling were provided in the SWMU report. The operating practices for the Main Post Landfill are described as surface dumping. The landfill is not a RCRA regulated Subtitle C or D landfill, and is being evaluated under the CERCLA process as an abandoned landfill. No hazardous substances or RCRA waste that present a threat to human health or the environment have been observed or detected at the site.

A site investigation (SI) was conducted by LBA in 1994. Field activities conducted included both soil-gas and groundwater screening investigations using direct-push equipment, followed by the installation and sampling of three monitoring wells (MPL94-01, -02, and -03). None of the soil gas or groundwater screening samples had detections above the method detection limit. Only one groundwater screening sample had a positive detection above regulatory standards based on laboratory analyses (1,4-dichlorobenzene). Groundwater samples collected from the three monitoring wells had detections of 1,2-dichloroethene (1,2-DCA) (MPL94-01 and -02), trichloroethene (MPL94-01 and -02), and dichloromethane (MPL94-01 only). All detections in groundwater samples collected from the monitoring wells were below the Kansas action limits (KALs) and USEPA MCLs for drinking water (LBA, 1995).

Groundwater was extensively investigated in the vicinity of the Site as part of the remedial investigation and feasibility study conducted for the 354 Area Solvent Detections project. Field activities were conducted between July 1999 and July 2002, and included groundwater screening and monitoring well installation and sampling in the vicinity of the Site (BMcD, 2001 and 2003). Additional monitoring wells installed in the vicinity of the former landfill included B354-99-12, -12b, -12c, -13b, and -13c (Figure 3-1). Table 3-1 presents the results for groundwater samples collected from these monitoring wells between September 1997 and July 2002 (BMcD, 2001). Groundwater monitoring was continued at the Site subsequent to the completion of the remedial investigation. Table 3-2 presents a summary of groundwater results for selected monitoring wells sampled from 2003 through 2006 (BMcD, 2003b; BMcD, 2004a; BMcD, 2004b; BMcD, 2005a; and BMcD, 2005b). Only Monitoring Wells B354-99-12c

and B354-99-13c remain as part of the sampling network. The other monitoring wells discussed above were abandoned and plugged in 2005.

VOCs detected in groundwater samples collected between September 1997 and July 2002 included tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and trans-1,2-DCE (Table 3-1). None of these detections exceeded the USEPA MCLs for the respective compounds. Metals detected in groundwater samples collected during this period included arsenic, barium, and chromium. Only arsenic exceeded the USEPA MCL.

Both VOCs and metals were detected in groundwater samples collected in vicinity of the Main Post Landfill Site between March 2003 and September 2006 (Table 3-2). VOCs detected in groundwater included TCE, cis-1,2-DCE, and trans-1,2-DCE (Table 3-1). None of these detections exceeded the USEPA MCLs for the respective compounds. Metals detected in groundwater samples collected during this period included arsenic, barium, and chromium, lead, and selenium. Only arsenic exceeded the USEPA MCL of 0.01 mg/L. Four monitoring wells had detections of arsenic in excess of the MCLs during this period. These included Monitoring Wells MPL94-01, B354-99-12c, B354-99-13b, and B354-99-13c. However, only Monitoring Well B354-99-13c has had arsenic detections in excess of the MCL subsequent to the September 2003 sampling event (Table 3-2). Concentrations of arsenic in groundwater samples collected from Monitoring Well B354-99-13c have been as high as 0.052 mg/L (April 2004).

3.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

No additional samples were collected at the Main Post Landfill as part of the ESI field activities. However, a site walk was conducted in order to document current site conditions. There were no unusual conditions (surface debris, soil staining, etc) noted during the site walk.

3.4 DISCUSSION AND RECOMMENDATIONS

Groundwater samples collected from monitoring wells installed in the vicinity of the Main Post Landfill Site have had detections of VOCs and metals. Only arsenic has been detected recently in groundwater samples at concentrations in excess of the USEPA MCL of 0.01 mg/L. However, this site is recommended for closed status based on the following:

- Arsenic is present in soils across Fort Riley and naturally occurs at elevated concentrations in excess of regulatory screening criteria. Because of this, arsenic has a propensity to leach to groundwater.

- Although arsenic is present in groundwater at elevated levels, there will be no water supply wells installed in the vicinity. There are no completed paths to potential receptors for the groundwater in this area. The post Real Property Master Plan controls activities which can be conducted in this area. This plan allows the DPW to prevent the installation of any water supply wells in this area.

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4.0 CUSTER HILL RUBBLE DUMP (FTRI-005)

4.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Custer Hill Rubble Dump (FTRI-005) is located approximately 600 ft west of Trooper Drive, west of the intersection of Jackson Avenue with Trooper Drive (Figures 1-1 and 4-1). This area is part of the Custer Hill cantonment area, which is part of the upland area of Fort Riley. The site covers approximately one-quarter acre and is overgrown with grass, brush, and trees. An ephemeral drainage runs through this Site and flows to the southeast, eventually discharging to the Kansas River approximately three miles downstream.

The Site is underlain by bedrock (interbedded limestone and shale), covered by shallow unconsolidated material. This unconsolidated material consists of residual soil and possibly loess. The depth to bedrock is not known, but is probably no more than a few feet. Groundwater in this area may occur at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock.

No protected or special ecological or cultural features were observed or are known to occur at or near this Site. Current and future land use at this site, based on the post environmental overlay, is anticipated to be administration.

No water supply wells are located in the immediate vicinity of this site. The nearest water supply wells are located approximately two miles to the south, on the floodplain of the Republican River.

4.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The Site was used for surface dumping of waste road material, concrete, and asphalt, and was operational for a six-month period during 1980-81 under Kansas permit #367. The materials were placed directly on the ground surface. No other materials were disposed at the site. The site was closed in 1981; however, no cover material was placed over the debris. The materials disposed at the site are not considered either CERCLA or RCRA hazardous wastes (LBA, 1993).

No previous sampling activities have been conducted at this site.

4.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

One surface soil sample was collected in the vicinity of the Custer Hill Rubble Dump on August 8, 2006. This soil sample was analyzed for VOCs (USEPA Method 8260) and SVOCs (USEPA Method 8270). A sample for RCRA metals (USEPA Methods 6010/7000) was inadvertently not collected on this date. A

soil sample for RCRA metals analysis was collected on December 8, 2006. Analytical results are presented in Table 4-1.

No SVOCs were detected in the surface soil sample collected. The only VOC detected was dichloromethane at a concentration of 43.1 µg/kg; however, this result was rejected during the data validation.

Arsenic, barium, cadmium, chromium, and lead were detected in the soil samples collected (Table 4-1). Only arsenic was detected at concentrations which exceeded the USEPA Region 9 residential PRG of 0.39 mg/kg. Arsenic was detected at concentrations of 7.7 and 7.9 (duplicate) mg/kg. However, both of these detections were below the KDHE residential RSK of 11 mg/kg. These detections were also below the DAF 20 PRG for migration to groundwater of 29 mg/kg for arsenic.

4.4 DISCUSSION AND RECOMMENDATIONS

No VOCs or SVOCs were detected in the soil sample collected at the Custer Hill Rubble Dump. Arsenic was detected in surface soil samples at concentrations in excess of the USEPA Region 9 residential PRG. However, these exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, present in Fort Riley formations and soil. Based on these results, the Custer Hill Rubble Dump (FTRI-005) is recommended for closed status.

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5.0 HOSPITAL INCINERATOR – IACH (FTRI-014)

5.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The IACH Incinerator (FTRI-014) was located on the eastern side of the IACH, which is located north of Huebner Road on Dickman Avenue at Camp Whitside (Figures 1-1 and 5-1). This incinerator is no longer in operation, and the incinerator and stack have been removed. The former incinerator room is currently used for the storage of waste (including medical waste) which is transported off post for incineration. The former incinerator space is only accessible by two exterior doors; there is no access from inside IACH.

The area around the IACH is built up, paved, and landscaped. There is a loading dock immediately adjacent to the former incinerator room, so much of the area is pavement and sidewalks. However, there is some grass present to the east of the east access doors to the former incinerator room.

No protected or special cultural or ecological features were observed or are known to occur at or near this Site.

Potential receptors include employees of IACH who work within or around the former incinerator room. These individuals might come into contact with metals residue which could be present on the wall or floor surfaces, or in soils around the area. No IACH employees work full-time within this space, with potential exposure being of a very intermittent and short term in nature.

5.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The IACH incinerator was initially used in 1978 and was shut down several years ago. When in operation, each 25-pound load was burned for 15 minutes. The incinerator was used to dispose of body parts and fluid including HIV infectious waste, yellow bag infectious waste, sharps (needles) and plastic tubing. The implements were first autoclaved prior to disposal. A current IACH employee, who was actively involved in the operation of the incinerator, stated that ash from the unit was usually removed through the east access doors. He also said that spilling of ash around the area was common and that cadmium had been an issue in the past. As stated above, the incinerator has been removed and medical waste is stored within the former incinerator room. There is a refrigerated storage unit inside the room.

There is no history of earlier environmental sampling efforts at this Site.

5.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Both wipe samples and surface soil samples were collected at the IACH incinerator.

Four wipe samples were collected from inside the former incinerator room on August 8, 2006. Wipe samples WP01 and WP03 were collected from the east and south walls, respectively. Wipe samples WP02 and WP04 were collected off the floor immediately below Wipes WP01 and WP03, respectively. These wipe samples were analyzed for RCRA Metals (USEPA Methods 6010/7000). On August 14, 2006, a second set of wipe samples were collected from the former incinerator room. These samples were collected specifically for the analysis of mercury, since a different sample preparation method was required. These samples were taken from the same general locations described above, although offset.

Three surface soil samples were collected from the grass area located immediately to the east of the east access doors to the former incinerator room (Figure 5-2). The soil samples were analyzed for RCRA metals (USEPA Methods 6010/7000).

Following the completion of field activities at this site, all surface soil sampling locations were surveyed. The survey data is included in Appendix B.

Wipe results are presented in Tables 5-1 and 5-2. Arsenic, barium, cadmium, chromium, lead, and mercury were detected in wipe samples collected within the former incinerator room. Arsenic was detected at one wipe location (W01) at a concentration of 3.1 micrograms per 100 square centimeters ($\mu\text{g}/100\text{cm}^2$). Barium was detected at one wipe location (W04) at a concentration of $10 \mu\text{g}/100\text{cm}^2$. Cadmium was also detected at W04 at a concentration of $0.57 \mu\text{g}/100\text{cm}^2$. Chromium was detected at all four wipe locations, at concentrations ranging from 0.8 to $2.5 \mu\text{g}/100\text{cm}^2$. Lead was also detected at all four wipe locations, at concentrations ranging from 1.0 to $2.7 \mu\text{g}/100\text{cm}^2$. Mercury was detected at two wipe locations (W02 and W04) at concentrations of 0.14 and $0.1 \mu\text{g}/100\text{cm}^2$, respectively.

Numerical screening values for the arsenic, barium, cadmium, and chromium wipe results were not available. The wipe results for lead were screened against the U.S. Department of Housing and Urban Development Lead Safe Housing Rule value of $4.3 \mu\text{g}/100 \text{cm}^2$. None of the wipe results for lead exceeded this level. The wipe results for mercury were screened against $1.57 \mu\text{g}/100 \text{cm}^2$. This value was calculated by the World Trade Center (WTC) Indoor Air Task Force Working Group as part of their evaluation of airborne dust hazards following the destruction of the WTC (WTC, 2003). None of the wipe results for mercury exceeded this screening value.

Arsenic, barium, cadmium, chromium, and lead were detected in the soil samples collected (Table 5-3). Only arsenic was detected at concentrations which exceeded the USEPA Region 9 residential PRGs of 0.39 mg/kg. Arsenic was detected in soil samples S01, S02, and S03 at concentrations of 1.7, 1.2, and 3.8 mg/kg, respectively. Two of these samples also exceeded the Industrial PRG of 1.6 mg/kg. However, all detections were below the KDHE residential RSK of 11 mg/kg. These detections were also below the DAF 20 PRG for migration to groundwater of 29 mg/kg for arsenic and the KDHE RSK standard of 5.84 mg/kg for the soil to groundwater protection pathway.

5.4 DISCUSSION AND RECOMMENDATIONS

Numerical screening values for the arsenic, barium, cadmium, and chromium wipe results were not available. The wipe results for lead and mercury were below their respective screening values of 4.3 and 1.57 $\mu\text{g}/100\text{ cm}^2$.

Arsenic was detected in surface soil samples at concentrations in excess of the USEPA Region 9 residential PRG. However, these exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, present in Fort Riley formations and soil.

Based on these results and the short term, intermittent nature of exposure within the space, the IACH Incinerator (FTRI-014) is recommended for closed status.

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6.0 SEFL INCINERATOR (FTRI-029)

6.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The SEFL Incinerator (FTRI-029) was located approximately 600 ft east of the intersection of Kansas Route K-18 and the Twelfth Street connector (Figures 1-1 and 6-1). The entire site lies on the floodplain of the Kansas River, at an elevation of approximately 1,055 ft above mean sea level. This area is not protected by a levee and is subject to flooding. During regional flooding in the summer of 1993, this area was inundated with water. The area around the former incinerator site is heavily wooded and overgrown with brush. There are remnants of the incinerators present on the Site.

Surface drainage in this area is not well developed, with ponding of water common. The Site is underlain by alluvial deposits of the Kansas River. These deposits, which consist of clay, silt, and sand, probably have a thickness of approximately 50 to 60 ft, and lie on shale and limestone bedrock. Depth to groundwater is expected to be approximately 10 to 15 ft bgs. Groundwater flow is generally to the east, towards the Kansas River (USGS, 2005).

No protected or special cultural features were observed or are known to occur at or near this Site. Wooded areas along the Kansas River are used during the winter months by bald eagles, a threatened species.

The Kansas River alluvial aquifer is used as a source of drinking water by nearby towns. Fort Riley has no water supply wells located at Camp Funston. The nearest public supply wells are those for the community of Ogden, which are located approximately 1.3 miles to the northeast of the Site. There are no other public supply wells within 4 miles of the Site.

6.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The date that landfilling activities commenced at the SEFL is not well defined; however, the area was an active landfill during World War II. The landfill probably received non-combustible debris, since combustible waste would have gone to the SEFL Incinerator. In addition, ash from the incinerator was probably disposed of in the landfill. During the construction of Kansas Route K-18, a wide variety of debris and trash was uncovered within the closed landfill. This included tin cans, garbage, paper, glass, wood, rags, wire, tinfoil, plastic, bones, cardboard, and shoes. This landfill and incinerator probably operated into the 1950s and were then closed. This facility probably received mostly municipal-type waste.

Both a Phase 1 and a Phase 2 SI were conducted at this Site in 1984 (LBA, 1995). The Phase 1 investigation included the sampling of surficial soils for metals and a soil gas/groundwater screening survey around the landfill perimeter. The Phase 2 investigation involved the installation of three well points along the perimeter of the eastern portion of the landfill for the collection of groundwater samples. These well points are SEFL-94-01, -02, and -03 (Figure 6-1).

Phase 1 surface soil results indicated that several metals were present in samples (Table 6-1 and Figure 6-2). Only lead was present at levels in excess of federal standards and Kansas guidelines. These detections of lead (4 samples) ranged from 3,000 to 14,000 mg/kg and were all located in the immediate vicinity of the former incinerator site. Following the removal of impacted soil from around the incinerator site, post-removal sampling indicated no detections of lead above action levels. Six groundwater screening sample locations had detections of benzene, chlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethene, ethylbenzene, toluene, vinyl chloride (VC), and/or total xylenes. Only VC was detected at concentrations in excess of federal standards and/or Kansas guidelines, with detections at 3.6 and 5.7 µg/L (Table 6-2 and Figure 6-3). These VC detections were located along the south margin of the former landfill (LBA, 1995).

Phase 2 groundwater sampling results had positive detections for 1,2-dichloroethene, total arsenic, total and soluble lead, and total antimony. VC was not detected in any of the Phase 2 groundwater samples. All three well points had detections of soluble lead, total lead and/or total antimony in excess of federal standards and/or Kansas guidelines. Well Point SEFL-94-01 had a detection of total lead at 0.17 mg/L. Well Point SEFL-94-02 had detections of soluble lead, total lead, and total antimony at concentrations of 0.02, 0.028, and 0.7 mg/L, respectively (Table 6-3). Total lead was detected at a concentration of 0.016 mg/L in Well Point SEFL-94-03 (LBA, 1995).

6.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Groundwater samples were collected from Monitoring Wells SEFL-94-01, -02, and -03 on August 11, 2006. All samples were collected using low-flow, minimum drawdown purging methods. Groundwater samples were analyzed for VOCs (USEPA Method 8260) and RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered).

VOCs detected in groundwater samples collected from the Site included chlorobenzene and cis-1,2-DCE (Table 6-4). Chlorobenzene was detected in only one monitoring well (SEFL94-03) at a concentration of 2.3 µg/L. All three monitoring wells had detections of cis-1,2-DCE at concentrations ranging from 1.0 to 1.8 µg/L. All of these detections were below both USEPA Region 9 PRGs and MCLs.

Arsenic and barium were detected in both filtered and unfiltered groundwater samples (Table 6-4). Low-flow groundwater sampling methods were used at this Site, resulting in low turbidity samples; therefore, the filtered and unfiltered samples had similar concentrations of these metals. Barium (dissolved) was detected in samples from all three monitoring wells, at concentrations ranging from 0.13 to 0.41 mg/L. Total barium results were virtually identical to dissolved concentrations. Arsenic (dissolved) was present only in the sample collected from Monitoring Well SEFL94-01, at a concentration of 0.011 mg/L. Arsenic (total) was present in both Monitoring Wells SEFL94-01 and -02, at concentrations of 0.014 and 0.013 mg/L, respectively. All of these arsenic detections exceeded the USEPA MCL of 0.01 mg/L.

6.4 DISCUSSION AND RECOMMENDATIONS

Groundwater samples collected from monitoring wells installed in the vicinity of the SEFL Incinerator Site had detections of VOCs and metals. Only arsenic was detected recently in groundwater samples at concentrations in excess of the USEPA MCL of 0.01 mg/L. However, this site can be recommended for closed status based on the following:

- Arsenic is present in soils across Fort Riley and naturally occurs at elevated concentrations in excess of regulatory screening criteria. Because of this, arsenic has a propensity to leach to groundwater.
- Although arsenic is present in groundwater at elevated levels, there are no public water supply wells in the vicinity and there are no completed paths to potential receptors for the groundwater in this area.

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7.0 SEFL (FTRI-036)

7.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The SEFL Site (FTRI-036) is located in the southeast corner of Camp Funston (Figure 1-1). This Site, which is approximately 50 acres in size, lies just north of the Kansas River and the old landfill area is bisected by Kansas Route K-18 (Figure 6-1). The former SEFL Incinerator site is located in the eastern part to the landfill site and is east of Kansas Route K-18. The entire site lies on the floodplain of the Kansas River, at an elevation of approximately 1,055 ft above mean sea level. That portion of the former SEFL to the east of Kansas Route K-18 is located in the alluvial 100-year flood plain, but the area to the west of K-18 is protected from the 100-year flood by the Fort Riley levee. During regional flooding in the summer of 1993, the eastern portion of the landfill was inundated with water. As a result, miscellaneous debris was scattered across the site. In addition, a thin layer of surficial sediments had been deposited as a result. The area to the west of K-18 is covered with grass, while the portion to the east of K-18 is heavily wooded. There are no structures present in the immediate vicinity of this Site.

No protected or special ecological or cultural features were observed or are known to occur at or near this Site. Current and future land use at this site, based on the post environmental overlay, is anticipated to be open space.

See Section 6.1 for a discussion of geology, hydrogeology, and potential receptors.

7.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

See Section 6.2 for a consolidated description of site background and previous sampling results for both the SEFL and SEFL Incinerator.

7.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Three direct-push borings were advanced on the eastern and southern boundaries of the Site on August 7, 2006. These direct-push borings were advanced to the water table, and groundwater samples were collected and analyzed for VOCs (USEPA Method 8260) and RCRA metals (USEPA Methods 6010/7000; both filtered and unfiltered). No soil samples were collected at these locations.

Following the completion of field activities at this site, all groundwater sampling locations were surveyed. The survey data is included in Appendix B.

VOCs detected in groundwater included 1,4-dichlorobenzene, chlorobenzene, cis-1,2-DCE, and trichloromethane (Table 7-1). Only 1,4-dichlorobenzene and trichloromethane concentrations exceeded the USEPA Region 9 PRGs for tap water of 0.5 and 0.17 µg/L, respectively. None of the VOC detections exceeded USEPA MCLs.

All eight of the RCRA metals were detected in unfiltered groundwater samples (Table 7-1). These were elevated over the corresponding concentrations for the same metals in the filtered samples. Because these groundwater samples were collected with direct-push equipment, the unfiltered samples had excessive turbidity, resulting in higher metals concentrations. Arsenic, barium, chromium, and lead were detected in filtered groundwater samples collected at the Site. Only arsenic and barium exceeded their MCLs of 0.01 and 2 mg/L, respectively (Figure 6-4). Arsenic was detected in groundwater samples from all three direct-push borings, at concentrations ranging from 0.01 to 0.018 mg/L. Barium was also detected in groundwater samples from all three direct-push borings, but only the sample from DP01 minimally exceeded the MCL of 2.0 mg/L, at a concentration of 2.03 mg/L.

7.4 DISCUSSION AND RECOMMENDATIONS

Groundwater samples collected from direct-push borings advanced in the vicinity of the SEFL Site had detections of VOCs and metals. Only arsenic and barium were detected in filtered groundwater samples collected at this Site at concentrations in excess of their USEPA MCLs of 0.01 and 2.0 mg/L, respectively. However, this site can be recommended for closed status based on the following:

- Arsenic is present in soils across Fort Riley and naturally occurs at elevated concentrations in excess of regulatory screening criteria. Because of this, arsenic has a propensity to leach to groundwater.
- Although arsenic and barium are present in groundwater at elevated levels, there are no public water supply wells in the vicinity and there are no completed paths to potential receptors for the groundwater in this area.

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8.0 OLD WHITSIDE INCINERATOR (FTRI-037)

8.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Old Whitside Incinerator (FTRI-037) is located ¼ mile southwest of the old Kansas Territorial Capital and situated on a bluff west of the Kansas River (Figures 1-1 and 8-1). The incinerator structure is approximately 250 ft northwest of the river and 30 ft above river level. The base of the incinerator is at an elevation of approximately 1,055 ft above mean sea level. Ruins of the former incinerator consist of a square brick tower (chimney), which is approximately six-ft square and 15-ft tall built into the slope. Inside the chimney are bricks and mortar which have fallen from the top of the structure; beneath the bricks are ashes, some of which appear to be from recent campfires. There is a fence surrounding the north part of the structure that is above the bluff, but the chimney and furnace aperture (downslope and on the south side) are accessible to the public. The area is wooded with many mature trees, and a public nature walk runs along the base of the bluff to the southeast. The area is fairly isolated and used infrequently.

The general area lies within the 100-year floodplain of the Kansas River and is not protected by a levee. There are no wetlands on or adjacent to the site. The geologic materials underlying the site consist of alluvium overlying bedrock. Although there are no water level measurements at the site, the depth to groundwater is thought to be less than 30 ft, the approximate elevation difference between the site and the Kansas River.

The Site lies within a heavily wooded riparian area, which is winter habitat for bald eagles, a threatened species. No other protected or special ecological or cultural features were observed or are known to occur at or near this Site. Current and future land use at this site, based on the post environmental overlay, is anticipated to be open space.

Contamination of surface or groundwater is not considered because of low migration potential. The main environmental hazard at this Site is associated with ingestion or inhalation of heavy metals in soil or dust.

8.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The former incinerator was constructed during World War I and was used as a medical incinerator for Camp Whitside. Use of the incinerator probably terminated when the new hospital was built in 1955. Very little information is available regarding historical operations of the incinerator.

The initial visual inspection, performed by LBA for the 1992 IWSA, did not identify evidence of ash or disturbance indicative of disposal. Information was not available on the operation of the incinerator or on the method and location of ash disposal. However, contamination of the soils with incinerator ash was considered possible. Metals were identified as the contaminants of potential concern (LBA, 1993).

The SI activities focused on the potential pathway of contaminant exposure through contact with incinerator ash and soils contaminated with heavy metals. Groundwater, surface water, and air pathways were not sampled due to low migration potential.

In March 1994, eight soil samples were collected in a radial pattern adjacent to and downgradient of the incinerator structure. Composite samples were collected from 0.5 to 2 ft depths from each location, and the samples were field screened by X-ray fluorescence for lead, zinc, copper, barium, and uranium. The samples were also analyzed in the laboratory for RCRA metals.

Laboratory sample results indicated that metals (arsenic, barium, cadmium, chromium, silver, and lead) were present at low concentrations. Lead was detected at a single location above the USEPA and the KDHE standard for a residential site. Although the levels of arsenic detected were above the most stringent USEPA and the KDHE guidelines, they appeared consistent with background levels detected at other Fort Riley sites assessed during the SI. All other metals were below the regulatory guidelines, including guidelines for residential sites. There is no potential for this Site to be a residential area (LBA, 1995).

8.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Two borings were advanced using a hand auger at the site on August 10, 2006. One boring was advanced within the fenced area to the immediate west of the former incinerator (SB02) and the other was advanced approximately 75 ft to the west-northwest of the former incinerator (SB01). Soil samples were collected from depths of ground surface to 6-in. and from 4 to 5 ft bgs, and were analyzed for lead (USEPA Method 7421). Logs were prepared for both of these borings and are included in Appendix A.

Following the completion of field activities at this site, both soil boring locations were surveyed. The survey data is included in Appendix B.

Lead was detected in all of the soil samples collected, at concentrations ranging from 13.6 to 83.8 mg/kg (Table 8-1). These concentrations were all below both the USEPA Region 9 residential PRGs and KDHE residential RSKs of 400 mg/kg.

8.4 DISCUSSION AND RECOMMENDATIONS

Concentrations of lead detected in soil samples collected at this Site were below the USEPA Region 9 residential PRGs and KDHE residential RSKs. Based on these results, the Old Whitside Incinerator is recommended for closed status.

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9.0 INACTIVE LANDFILLS – CAMP WHITSIDE (FTRI-052)

9.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Inactive Landfills at Camp Whitside (Inactive Landfills) site (FTRI-052) is located in a former limestone quarry north of Camp Whitside and is approximately 1,500 ft east of the C/D Landfill (Figures 1-1 and 9-1). There are no permanent manmade structures on or within the Inactive Landfills. Currently vegetated, the site boundaries are not readily identifiable in the field, and the primary evidence of a former landfill are two signs marking it as such. The landfill appears to be approximately 2.5 acres in size based on the boundaries of the former quarry.

The general setting, geology, soils, and hydrology of the Inactive Landfills are similar to that previously described for the Whitside C/D Landfill (see Section 2.1).

The Inactive Landfills is located in a former limestone quarry. The interior floor of the former quarry is represented by the top of the Fort Riley Limestone. This bedrock surface is visible throughout the majority of the former quarry, indicating that there has been little “filling” of the quarry. The interior of the quarry contains piles of vegetated soil mixed with debris (e.g., concrete, asphalt, wood, and metal); the piles appeared to have a high soil content relative to the percent of debris. In addition, debris was scattered along the eastern wall of the former quarry, indicating that some dumping of debris had occurred from the top of the former quarry wall. Due to the steep wall of the former quarry, there is little accumulation of debris along the eastern wall. Debris was also observed along the western margins of the former quarry, where the topographic surface slopes to the west. It is possible that debris has been landfilled in this area, artificially increasing the slope along the western boundary. Rain water at the site is expected to flow as runoff toward topographically lower areas and may infiltrate the shallow bedrock materials. At the Inactive Landfills, the bedrock surface forming the landfill floor is relatively flat, and runoff from it is expected to move toward the southern entrance to the site. Rain water will also infiltrate the subsurface. The infiltrating groundwater would encounter one of the many shale layers in bedrock and move laterally. Some of this may emerge as seeps at the low side of the fill areas, while some likely moves laterally into the limestones.

No protected or special ecological or cultural features were observed or are known to occur at or near this Site. Current and future land use at this site, based on the post environmental overlay, is anticipated to be open space.

There are no water supply wells in the vicinity of the Inactive Landfills. The Fort Riley water supply well field is located approximately two miles southwest of the Site. The municipal supply wells for the city of Ogden are located approximately 3 ½ miles northeast of the Site.

9.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

There is little information available on the history of the Inactive Landfills. The landfill was closed shortly after it caught fire in 1988.

Three groundwater monitoring wells around the perimeter of the Inactive Landfills were sampled in April 1994 (WLF94-05, WLF94-06, and WLF94-07). There were no detections of VOCs, SVOCs, pesticides, PCBs, herbicides, or metals in any of the wells.

Six sediment samples were collected from the intermittent drainages leading from the C/D Landfill in March 1994. These included the drainage located between the Whitside C/D Landfill and the Inactive Landfills. None of the drainages around the periphery of the landfill were flowing at the time of sampling. Therefore, sediment samples were collected from within the drainage pathway. There were no detections of VOCs, SVOCs, PCBs, or herbicides in any of the sediment samples. Chlordane was detected at a concentration of 44 µg/kg, which is more than an order of magnitude below state cleanup standards and two orders of magnitude below the USEPA Risk-Based Guidelines. No other pesticides were detected. The metals detected are arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc. Along the drainage west of the C/D Landfill, the downgradient locations did not have any detections of metals that were more than three times those concentrations detected in the upgradient sample. For the drainage between the C/D Landfill and the Inactive Landfills, the detections for metals between sample locations did not vary by more than a factor of two for any metals. Of the metals detected, none exceed the maximum concentrations of the USEPA Risk-Based Guidelines (LBA, 1995).

9.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Three surface soil/sediment samples were collected from the intermittent drainage flowing south from the vicinity of the Inactive Landfills on August 8, 2006. These samples were collected from that segment of the drainage just north of where it intersects the junction of 4th and E Streets (Figure 9-1). These samples were submitted for analysis for RCRA metals (USEPA Methods 6010/7000).

In addition, an attempt was made to collect a groundwater sample from the same intermittent drainage described above on August 7, 2006. A direct-push boring was advanced in the drainage just north of where it intersected the junction of 4th and E Streets. This location was essentially collocated with surface

soil/sediment sampling location S03 (Figure 9-1). The direct-push boring was advanced to a depth of approximately 12 ft bgs; however, no groundwater was present and no samples were collected.

Following the completion of field activities at this site, all surface soil/sediment sampling locations were surveyed. The survey data is included in Appendix B.

Arsenic, barium, cadmium, chromium, and lead were detected in some or all of the soil samples collected at the Site, but only arsenic exceeded regulatory screening standards (Table 9-1). Detections of arsenic ranged from 3.8 to 7.3 mg/kg, which exceeded the USEPA Region 9 Industrial PRG of 1.6 mg/kg (Figure 9-2). However, these were all below the KDHE residential RSK for arsenic of 11 mg/kg. These detections were also below the DAF 20 PRG for migration to groundwater of 29 mg/kg for arsenic; however, one soil sample had detections of arsenic which exceeded the KDHE RSK standard of 5.84 mg/kg for the soil to groundwater protection pathway.

9.4 DISCUSSION AND RECOMMENDATIONS

Arsenic was detected in surface soil samples at concentrations which exceeded the USEPA Region 9 Industrial PRG, but below the residential KDHE RSK. These exceedences are a result of naturally occurring concentrations of arsenic in Fort Riley soils at levels in excess of regulatory screening criteria. Based on these results, the Inactive Landfills are recommended for closed status.

* * * * *

10.0 REFERENCES

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Tables

Table 1-1
ESI Site Summary
Pesticide / PCB Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name		RCRA Regulatory History		CERCLA Regulatory History			ESI 2006-2007, Actions Taken/Recommended
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA	NPL August 1990/ FFA June 1991			
Pesticide / PCB Sites (Group 1)		Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC	SI Reports	ESI 2006-2007	
DRMO Storage Area 1	FTRI- 006	Hazardous Waste Storage Facility AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Elevated POL contamination in NW corner - Deferred to UST Program No PCB detects above 50 ppm in soil	Confirm SI conclusion of no threat to HH & E against new PCB RSK of 4.3 ppm in soil	No actions are necessary to protect HH & E Transfer northern portion of site to Former Bldg 1245 Dispensing Station - FTRI-066; Closed Status
PCB Storage Building 343	FTRI- 007	AEHA, 1988 SWMU-Proposed environmental sampling				Confirm no threat to HH & E	Sample concrete floor and exterior soil for PCBs If sampling results show levels are protective of HH & E request Closed Status
PCB Storage Conexes 348	FTRI- 008	Hazardous Waste Storage Facility - Clean Closed 1990 AEHA, 1988 SWMU-Proposed environmental sampling				Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Pesticide UST at Camp Funston	FTRI- 010	AEHA, 1988 SWMU-Proposed environmental sampling Tank removed and clean closed in 1991				Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
DRMO Storage Area 3	FTRI- 012	AEHA, 1988 SWMU-Proposed environmental sampling	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	No ESI field activities conducted	No actions are necessary to protect HH & E; Closed Status
DRMO Storage Area 2	FTRI- 015	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 One PCE GW result above MCL No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Livestock Dipping Facility	FTRI- 047		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Elevated levels of metals and pesticides in mixing pit No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Pesticides Facilities	FTRI- 048		HSWA, 1998 No potential risk to HH & E based on site visit of building 1022 and Camp Whiteside HSWA, 1998 No potential risk to HH & E based on SI for Custer Hill Golf Course Pesticide Facility	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E for Golf Course Pesticide Facility	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Mercury Contamination Areas	FTRI- 049		HSWA, 1998 No potential risk to HH & E based on site visit	Mercury removal in 1991/1992 IWSA (LBA, 1993) Identified for Further Evaluation Vaults retrofitted with air	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status

Table 1-1
ESI Site Summary
Pesticide / PCB Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History				
		RCRA Regulatory History	CERCLA Regulatory History	CERCLA Regulatory History	CERCLA Regulatory History	
PCB Transformer Sites	FTRI- 050	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No PCB detects above 50 ppm in soil No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Milford Campground / Marina	FTRI- 055	HSWA, 1998 No potential risk to HH & E based on SI		LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	RCRA Regulatory History		CERCLA Regulatory History			ESI 2006-2007, Actions Taken/Recommended
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA	NPL August 1990/ FFA June 1991	SI Reports	ESI 2006-2007	
Wastewater Sites (Group 2)		Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC			
Industrial Wastewater System Custer Hill	FTRI- 020	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) East and West Ponds Identified for Further Evaluation Central Vehicle Wash Facility Recommended No Further Action	LBA, 1994 No CERCLA contaminants East Pond Free Product in GW West Pond No threat to HH & E Central Vehicle Wash Facility found POL in sediment	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Camp Funston WWTP Sludge Drying Beds	FTRI- 022	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Custer Hill WWTP Sludge Drying Beds	FTRI- 023	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Camp Forsyth WWTP Sludge Drying Beds	FTRI- 024	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Main Post WWTP Sludge Drying Beds	FTRI- 025	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Range Complex Wastewater Lagoons	FTRI- 026	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
Petroleum / VOC Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended	
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA				NPL August 1990/ FFA June 1991
Abandoned VOC Tanks - IACH	FTRI- 013	AEHA, 1988 SWMU-Proposed environmental sampling		Tanks removed in September 1990 Field test showed 110 ppm TPH in soil		Confirm conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Waste Oil AST, 3rd Battery	FTRI- 016	AEHA, 1988 SWMU-No evidence of release		After 1988, AST decommissioned and removed		Site visit to confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Waste Oil AST, 4th Battery	FTRI- 017	AEHA, 1988 SWMU-No evidence of release		After 1988, AST decommissioned and removed		Site visit to confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Fire Training Area Facility 892	FTRI- 018	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 Recommends investigation, review, or remediation	IWSA (LBA, 1993) Recommended No Further Action	USTs removed 1996 with clean closure Ground-water contamination above MCLs for 1,2-DCA, benzene, and toluene in 1999	Confirm no threat to HH & E	Sample soil and groundwater for VOCs. If sampling results show levels are protective of HH & E request Closed Status
Fire Training Area, Camp Funston	FTRI- 028	1982 soil removal AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action Site investigated as part of Southwest Funston Landfill	Vinyl chloride above MCL in 2004 Below MCL in 2006 and 2007 in SFL wells	No ESI field activities	No actions are necessary to protect HH & E; Closed Status
Consolidated Maintenance Facility Building 8100	FTRI- 039			IWSA (LBA, 1993) Identified for Further Evaluation	All USTs and ASTs removed in 1994 with clean closure	Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Oil Testing Lab Building 1022	FTRI- 040		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Furniture Repair Shops	FTRI- 041		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation Building 1605 soil removed in 1993	LBA, 1994 Buildings 1301 & 1605 No evidence of releases LBA, 1995 Building 319 No threat to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Print and Publications Shop Building 263	FTRI- 045		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Building 727 Waste Pit	FTRI- 051		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	Sample groundwater for lead and arsenic If sampling results show levels are protective of HH & E, request Closed Status.

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl

Tab. 1-1
ESI Site Summary
Petroleum / VOC Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History
ESI - Expanded Site Investigation		PCE - Tetrachloroethene
FFA - Federal Facility Agreement		POL - Petroleum, Oil, and Lubricant
HH&E - Human Health & Environment		PPM - Parts per Million
HSWA - Hazardous and Solid Waste Amendment		RCRA - Resource Conservation and Recovery Act
IACH - Irwin Army Community Hospital		SI - Site Investigation
IWSA - Installation Wide Site Assessment		SWMU - Solid Waste Management Unit
KDHE - Kansas Department of Health and Environment		TPH - Total Petroleum Hydrocarbons
LBA - Louis Berger and Associates		UST - Underground Storage Tank
MCL - Maximum Contaminant Level		WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
Former Landfill /
Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA			
Whitside C/D Landfill	FTRI- 002 AEHA, 1988 SWMU-Proposed environmental sampling	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Main Post Landfill	FTRI- 004 AEHA, 1988 SWMU-No evidence of release			IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Custer Hill Rubble Dump	FTRI- 005 AEHA, 1988 SWMU-No evidence of release			IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release of hazardous substances and no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Hospital Incinerator - IACH	FTRI- 014 AEHA, 1988 SWMU-No evidence of release					Confirm evidence of no release of hazardous substances and no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Southeast Funston Landfill Incinerator	FTRI- 029 AEHA, 1988 SWMU-No evidence of release			IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 Detected lead in soil Removed impacted soil in 1999	Confirm no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Southeast Funston Landfill	FTRI- 036			IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Detected lead, antimony & VC above MCL in GW	Confirm no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Old Whitside Incinerator	FTRI- 037			IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Inactive Landfills - Camp Whitside	FTRI- 052			IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
POL Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History					
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA	NPL August 1990/ FFA June 1991	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
POL Sites (Group 5)	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC				
Tactical Vehicle Maintenance Shops	FTRI- 042		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program		Site visits to confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Former Gas Stations/Garages	FTRI- 043		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program		Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status except at Camp Forsyth I & 7th Streets location. Collect subsurface soil samples for VOCs.
6200 Area Fuel Oil Line	FTRI- 057				POL-contaminated soil removed in 1997 No potential risk to HH & E	Confirm conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Underground Storage Tanks	FTRI- 059	AEHA, 1988 SWMU-No evidence of release under obsolete FTRI-015	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (RCRA Subtitle I)	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program	USTs removed in 1990s Residual POL contamination of soil and ground water No potential risk to HH & E	Confirm conclusion of no threat to HH & E	No actions are necessary to protect HH & E for Closed Sites (See Table 5-1) Request Administrative Closure for Tanks 7903a & b and 7923 from KDHE, North Central District Office

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 2-1
Soil Detections
Whitside C/D Landfill (FTRI-002)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	002-DP01/SS01 8/8/2006 0 - 0.5 ft 06080662	002-DP02/SB02 8/7/2006 4 - 5 ft 06080549	002-DP02/SB22 8/7/2006 4 - 5 ft 06080550 Duplicate	002-DP02/SS01 8/7/2006 0 - 0.5 ft 06080548	
Pesticides	UNITS						
Chlordane	mg/kg	1.6 / 6.5	24 / 55	0.022 U	0.023 U	0.022 U	0.031

Notes:

1. All data screened against the USEPA Region 9 PRGs (residential). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-1
Soil Detections
Whitside C/D Landfill (FTRI-002)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	002-DP03/SB02 8/8/2006 0 - 0.5 ft 06080661	002-DP03/SS01 8/8/2006 0 - 0.5 ft 06080660
Pesticides	UNITS				
Chlordane	mg/kg	1.6 / 6.5	24 / 55	0.023 U	0.022 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (residential). All exceedances are shaded.

mg/kg - milligrams per kilogram
U - compound was not detected

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

Table 3-1
Groundwater Detections (BMcD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

MPL94-01

		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	5 U	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	ND	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	5 U	NS	1.5	1.9	2.2	1.4	2	1.9	1.7	2.1
Dibromochloromethane	ug/L	100 (Note 1)	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	5 U	NS	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	ND	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Vinyl Chloride	ug/L	2	ND	NS	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	7.3 J	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NA	NS	NA	NA	NA	NA	4	9	4	6
Inorganics	UNITS											
Alkalinity	mg/L	---	NA	NS	NA	NA	NA	NA	509	505	567	513
Chloride	mg/L	250 (Note 4)	NA	NS	NA	NA	NA	NA	100	100	100	100
Nitrate	mg/L	10	NA	NS	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NA	NS	NA	NA	NA	NA	200	180	190	200
Sulfide	mg/L	---	NA	NS	NA	NA	NA	NA	0.1 U	0.1 UR	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NA	NS	NA	NA	NA	NA	3.6	5	4.4	4.8
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	0.004 JR	NS	NA	NA	NA	NA	0.005 U	0.005 U	0.005 U	0.005 U
Barium, Total	mg/L	2	0.177	NS	NA	NA	NA	NA	0.14	0.16	0.19	0.2
Chromium, Total	mg/L	0.1	0.005 U	NS	NA	NA	NA	NA	0.002 U	0.002 U	0.004	0.002 U
Lead, Total	mg/L	0.015	0.002 UR	NS	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	0.0002 U	NS	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
NI - Not Installed (at time of sampling)
NS - Monitoring Well/Piezometer not sampled
mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act
USEPA - United States Environmental Protection Agency

September 1997 groundwater samples were analyzed at ITS Laboratories. The validity of this data is questionable, but it is included here for completeness.

1. USEPA MCL for total trihalomethanes is 100 ug/L.
2. USEPA MCL for total xylenes is 10,000 ug/L.
3. KDHE RSK value for groundwater pathway.
4. Secondary MCL.

Positive detections are in bold and italics.

Detections equal to or exceeding MCLs are shaded.

Table from 354 Area Solvent Detections RI Report (BMcD, 2003)

Table 3-1

Page 1 of 8

Table 3-1
Groundwater Detections (BMCD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

MPL94-02

		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	5 U	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	ND	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	5 U	NS	1.7	2	2.2	2.8	3	2.3	2.4	2.8
Dibromochloromethane	ug/L	100 (Note 1)	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	ND	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	5 U	NS	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	ND	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	ND	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	ND	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Vinyl Chloride	ug/L	2	ND	NS	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	10 U	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NA	NS	NA	NA	NA	NA	4	3	5	6
Inorganics	UNITS											
Alkalinity	mg/L	---	NA	NS	NA	NA	NA	NA	597	470	561	474
Chloride	mg/L	250 (Note 4)	NA	NS	NA	NA	NA	NA	200	120	140	160
Nitrate	mg/L	10	NA	NS	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NA	NS	NA	NA	NA	NA	250	160	160	150
Sulfide	mg/L	---	NA	NS	NA	NA	NA	NA	0.1 U	0.1 R	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NA	NS	NA	NA	NA	NA	3.5	3.4	3.2	4.7
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	0.0046 JU	NS	NA	NA	NA	NA	0.007	0.008	0.008	0.006
Barium, Total	mg/L	2	0.169	NS	NA	NA	NA	NA	0.2	0.15	0.18	0.19
Chromium, Total	mg/L	0.1	0.005 U	NS	NA	NA	NA	NA	0.002 U	0.004	0.01	0.002 U
Lead, Total	mg/L	0.015	0.0017 J	NS	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	0.0002 U	NS	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
NI - Not installed (at time of sampling)
NS - Monitoring Well/Piezometer not sampled
mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

September 1997 groundwater samples were analyzed at ITS Laboratories. The validity of this data is questionable, but it is included here for completeness.

1. USEPA MCL for total trihalomethanes is 100 ug/L.
2. USEPA MCL for total xylenes is 10,000 ug/L.
3. KDHE RSK value for groundwater pathway.
4. Secondary MCL.
Positive detections are in bold and italics.
Detections equal to or exceeding MCLs are shaded.

Table from 354 Area Solvent Detections RI Report (BMCD, 2003)

Table 3-1
Groundwater Detections (BMcD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

MPL94-03		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	NS	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NS	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NS	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NS	NS	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NS	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NS	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NS	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8	0.5 U	0.7
Dibromochloromethane	ug/L	100 (Note 1)	NS	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NS	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NS	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NS	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NS	NS	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	NS	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NS	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NS	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Vinyl Chloride	ug/L	2	NS	NS	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	NS	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NS	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NS	NS	NA	NA	NA	NA	2 U	7	3	5
Inorganics	UNITS											
Alkalinity	mg/L	---	NS	NS	NA	NA	NA	NA	760	551	585	533
Chloride	mg/L	250 (Note 4)	NS	NS	NA	NA	NA	NA	140	90	100	100
Nitrate	mg/L	10	NS	NS	NA	NA	NA	NA	0.3	0.1 U	0.3	0.1
Sulfate	mg/L	250 (Note 4)	NS	NS	NA	NA	NA	NA	120	190	190	190
Sulfide	mg/L	---	NS	NS	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NS	NS	NA	NA	NA	NA	9.4	5.1	6.7	5.3
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	NS	NS	NA	NA	NA	NA	0.006	0.005 U	0.005 U	0.005 U
Barium, Total	mg/L	2	NS	NS	NA	NA	NA	NA	0.1 U	0.1	0.1 U	0.1 U
Chromium, Total	mg/L	0.1	NS	NS	NA	NA	NA	NA	0.002 U	0.002 U	0.002	0.002 U
Lead, Total	mg/L	0.015	NS	NS	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NS	NS	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
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USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

- USEPA MCL for total trihalomethanes is 100 ug/L.
- USEPA MCL for total xylenes is 10,000 ug/L.
- KDHE RSK value for groundwater pathway.
- Secondary MCL.

Positive detections are in bold and italics.

Table from 354 Area Solvent Detections RI Report (BMcD, 2003)

Table 3-1
Groundwater Detections (BMCD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-12

Date Sampled:		Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS									
1,1,2-Trichloroethane	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NI	NI	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NI	NI	0.5	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NI	NI	2.2	2	2.5	3.7	3.6	2.6	2.5
Dibromochloromethane	ug/L	100 (Note 1)	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NI	NI	1.1 U	1.1 U	1.1 U	1.1 U	1.4	1.1 U	1.1 U
Toluene	ug/L	1,000	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NI	NI	1.3	0.5 U	1.3	1.6	1.2	1	1
Vinyl Chloride	ug/L	2	NI	NI	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS										
Bis(2-ethylhexyl)phthalate	ug/L	6	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS										
Methane	ug/L	---	NI	NI	NA	NA	NA	NA	2 U	2 U	2 U
Inorganics	UNITS										
Alkalinity	mg/L	---	NI	NI	NA	NA	NA	NA	445	462	468
Chloride	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	130	130	130
Nitrate	mg/L	10	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	140	130	150
Sulfide	mg/L	---	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NI	NI	NA	NA	NA	NA	2.3	2.7	2.7
RCRA Metals	UNITS										
Arsenic, Total	mg/L	0.05	NI	NI	NA	NA	NA	NA	0.005 U	0.005 U	0.005 U
Barium, Total	mg/L	2	NI	NI	NA	NA	NA	NA	0.11	0.12	0.11
Chromium, Total	mg/L	0.1	NI	NI	NA	NA	NA	NA	0.002 U	0.003	0.002 U
Lead, Total	mg/L	0.015	NI	NI	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NI	NI	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
NI - Not Installed (at time of sampling)
NS - Monitoring Well/Piezometer not sampled
mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

1. USEPA MCL for total trihalomethanes is 100 ug/L.
2. USEPA MCL for total xylenes is 10,000 ug/L.
3. KDHE RSK value for groundwater pathway.
4. Secondary MCL.

Positive detections are in bold and italics.
Detections equal to or exceeding MCLs are shaded.

Table from 354 Area Solvent Detections RI Report (BMCD, 2003)

Table 3-1

Page 4 of 8

Table 3-1
Groundwater Detections (BMCD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-12b		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles		UNITS	MCL/KSWQS									
1,1,2-Trichloroethane	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NI	NI	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NI	NI	7.7	8.4	7.9	6.6	6.8	6.8	5.9	5.7 J
Dibromochloromethane	ug/L	100 (Note 1)	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NI	NI	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NI	NI	0.5 U	0.5	0.5 U	0.5	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NI	NI	0.8	0.8	0.7	1.3	0.9	1	0.6	1.2
Vinyl Chloride	ug/L	2	NI	NI	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles		UNITS										
Bis(2-ethylhexyl)phthalate	ug/L	6	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses		UNITS										
Methane	ug/L	---	NI	NI	NA	NA	NA	NA	2 U	2 U	10	3
Inorganics		UNITS										
Alkalinity	mg/L	---	NI	NI	NA	NA	NA	NA	402	381	441	427
Chloride	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	230	200	180	210
Nitrate	mg/L	10	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	180	160	170	170
Sulfide	mg/L	---	NI	NI	NA	NA	NA	NA	0.1 U	0.1 UR	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NI	NI	NA	NA	NA	NA	1.7	2.5	2.1	2.1
RCRA Metals		UNITS										
Arsenic, Total	mg/L	0.05	NI	NI	NA	NA	NA	NA	0.007	0.01	0.006	0.008
Barium, Total	mg/L	2	NI	NI	NA	NA	NA	NA	0.14	0.18	0.13	0.12
Chromium, Total	mg/L	0.1	NI	NI	NA	NA	NA	NA	0.002 U	0.002 U	0.002 U	0.002 U
Lead, Total	mg/L	0.015	NI	NI	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NI	NI	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
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mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

- USEPA MCL for total trihalomethanes is 100 ug/L.
- USEPA MCL for total xylenes is 10,000 ug/L.
- KDHE RSK value for groundwater pathway.
- Secondary MCL.

Positive detections are in bold and italics.

Detections equal to or exceeding MCLs are shaded.

Table from 354 Area Solvent Detections RI Report (BMCD, 2003)

Table 3-1
Groundwater Detections (BMcD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-12c

		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NI	NI	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NI	NI	7	7.7	7.3	6.4	6.8	5.7	5.9	5.7 J
Dibromochloromethane	ug/L	100 (Note 1)	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NI	NI	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NI	NI	0.5 U	0.5 U	0.5 U	0.5	0.5	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NI	NI	0.8	0.8	0.7	1.8	0.9	0.8	1.5	1.9
Vinyl Chloride	ug/L	2	NI	NI	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NI	NI	NA	NA	NA	NA	2 U	9	2 U	2 UJ
Inorganics	UNITS											
Alkalinity	mg/L	---	NI	NI	NA	NA	NA	NA	403	422	409	432
Chloride	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	240	160	210	240
Nitrate	mg/L	10	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	170	150	160	170
Sulfide	mg/L	---	NI	NI	NA	NA	NA	NA	0.1 U	0.1 UR	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NI	NI	NA	NA	NA	NA	1.6	3.3	1.9	1.6
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	NI	NI	NA	NA	NA	NA	0.011	0.009	0.01	0.012
Barium, Total	mg/L	2	NI	NI	NA	NA	NA	NA	0.2	0.12	0.19	0.2
Chromium, Total	mg/L	0.1	NI	NI	NA	NA	NA	NA	0.002	0.003	0.002 U	0.002 U
Lead, Total	mg/L	0.015	NI	NI	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NI	NI	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
NI - Not Installed (at time of sampling)
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mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

1. USEPA MCL for total trihalomethanes is 100 ug/L
2. USEPA MCL for total xylenes is 10,000 ug/L
3. KDHE RSK value for groundwater pathway.
4. Secondary MCL.

Positive detections are in bold and italics.

Table from 354 Area Solvent Detections RI Report (BMcD, 2003)

Table 3-1
Groundwater Detections (BMCD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-13b		Date Sampled:	Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NI	NI	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NI	NI	0.5 U	0.9	1.4	1.4	1.5	2.5	2.1	2.3
Dibromochloromethane	ug/L	100 (Note 1)	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NI	NI	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Vinyl Chloride	ug/L	2	NI	NI	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NI	NI	NA	NA	NA	NA	7	16	18	8
Inorganics	UNITS											
Alkalinity	mg/L	---	NI	NI	NA	NA	NA	NA	499	441	491	442
Chloride	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	100	100	100	100
Nitrate	mg/L	10	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	180	160	150	140
Sulfide	mg/L	---	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NI	NI	NA	NA	NA	NA	4	3.3	3.4	4.2
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	NI	NI	NA	NA	NA	NA	0.007	0.038	0.034	0.036
Barium, Total	mg/L	2	NI	NI	NA	NA	NA	NA	0.14	0.18	0.2	0.17
Chromium, Total	mg/L	0.1	NI	NI	NA	NA	NA	NA	0.002 U	0.002	0.002 U	0.002 U
Lead, Total	mg/L	0.015	NI	NI	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NI	NI	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
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2. USEPA MCL for total xylenes is 10,000 ug/L.
3. KDHE RSK value for groundwater pathway.
4. Secondary MCL.

Positive detections are in bold and italics.
Detections equal to or greater than MCL are shaded.

Table from 354 Area Solvent Detections RI Report (BMCD, 2003)

Table 3-1
Groundwater Detections (BMCD, 2003)
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

		Date Sampled:										
		Sep-97	Nov-98	Feb-00	Jul-00	Oct-00	Mar-01	Oct-01	Jan-02	Apr-02	Jul-02	
B354-99-13c												
Volatiles	UNITS	MCL/KSWQS										
1,1,2-Trichloroethane	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Benzene	ug/L	5	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Bromodichloromethane	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	ug/L	9 (Note 3)	NI	NI	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroform	ug/L	100 (Note 1)	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/L	70	NI	NI	<i>4.3</i>	<i>4.8</i>	<i>5.3</i>	<i>3.9</i>	<i>3.4</i>	<i>3.3</i>	<i>3.3</i>	<i>3.2</i>
Dibromochloromethane	ug/L	100 (Note 1)	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Ethylbenzene	ug/L	700	NI	NI	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
m,p-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
o-Xylene	ug/L	10,000 (Note 2)	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Tetrachloroethylene	ug/L	5	NI	NI	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Toluene	ug/L	1,000	NI	NI	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	ug/L	100	NI	NI	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	ug/L	5	NI	NI	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Vinyl Chloride	ug/L	2	NI	NI	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Semivolatiles	UNITS											
Bis(2-ethylhexyl)phthalate	ug/L	6	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	ug/L	12,000 (Note 3)	NI	NI	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Miscellaneous Analyses	UNITS											
Methane	ug/L	---	NI	NI	NA	NA	NA	NA	<i>5</i>	<i>6</i>	<i>4</i>	<i>6</i>
Inorganics	UNITS											
Alkalinity	mg/L	---	NI	NI	NA	NA	NA	NA	<i>398</i>	<i>366</i>	<i>419</i>	<i>371</i>
Chloride	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	<i>120</i>	<i>120</i>	<i>100</i>	<i>100</i>
Nitrate	mg/L	10	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	mg/L	250 (Note 4)	NI	NI	NA	NA	NA	NA	<i>130</i>	<i>100</i>	<i>110</i>	<i>120</i>
Sulfide	mg/L	---	NI	NI	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Total Organic Carbon	mg/L	---	NI	NI	NA	NA	NA	NA	<i>2.2</i>	<i>1.8</i>	<i>1.9</i>	<i>1.7</i>
RCRA Metals	UNITS											
Arsenic, Total	mg/L	0.05	NI	NI	NA	NA	NA	NA	<i>0.052</i>	<i>0.051</i>	<i>0.058</i>	<i>0.047</i>
Barium, Total	mg/L	2	NI	NI	NA	NA	NA	NA	<i>0.26</i>	<i>0.29</i>	<i>0.3</i>	<i>0.25</i>
Chromium, Total	mg/L	0.1	NI	NI	NA	NA	NA	NA	0.002 U	<i>0.003</i>	0.002 U	0.002 U
Lead, Total	mg/L	0.015	NI	NI	NA	NA	NA	NA	0.003 U	0.003 U	0.003 U	0.003 U
Mercury, Total	mg/L	0.002	NI	NI	NA	NA	NA	NA	0.0002 U	0.0002 U	0.0002 U	0.0002 U

Notes:

J - Qualified as estimated
R - Qualified as rejected
U - Qualified as undetected by laboratory
NA - Well sampled, but compound not analyzed
ND - Not Detected (reporting limit unknown)
NI - Not Installed (at time of sampling)
NS - Monitoring Well/Piezometer not sampled
mg/L - milligrams per liter
USEPA - United States Environmental Protection Agency

ug/L - micrograms per liter
Chloroform - Trichloromethane
Carbon Tetrachloride - Tetrachloromethane
KSWQS - Kansas State Water Quality Standards
MCL - USEPA Maximum Contaminant Limit
RCRA - Resource Conservation and Recovery Act

- USEPA MCL for total trihalomethanes is 100 ug/L.
- USEPA MCL for total xylenes is 10,000 ug/L.
- KDHE RSK value for groundwater pathway.
- Secondary MCL.

Positive detections are in bold and italics.

Detections equal to or exceeding MCLs are shaded.

Table from 354 Area Solvent Detections RI Report (BMCD, 2003)

Table 3-2
Groundwater Detections 2003 - 2006
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

MPL94-01		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	1.4	1.1	NS	NS	NS	NS
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.005	0.014	NS	NS	NS	NS
Barium, Total	mg/L	2.6	2	0.2	0.18	NS	NS	NS	NS

MPL94-02		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	2.7	NS	NS	NS	NS	NS
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.007	NS	NS	NS	NS	NS
Barium, Total	mg/L	2.6	2	0.18	NS	NS	NS	NS	NS

MPL94-03		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Metals	UNITS								
Selenium, Total	mg/L	0.18	0.05	0.016	0.026	NS	NS	NS	NS

B354-99-12		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	3	2.9	NS	NS	NS	NS
Trichloroethene	ug/L	0.028	5	0.9	0.9	NS	NS	NS	NS
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.006	0.005 U	NS	NS	NS	NS
Barium, Total	mg/L	2.6	2	0.12	0.12	NS	NS	NS	NS

Table 3-2
Groundwater Detections 2003 - 2006
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-12b		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	4.3	6.1	NS	NS	NS	NS
trans-1,2-Dichloroethene	ug/L	120	100	0.5 U	0.8	NS	NS	NS	NS
Trichloroethene	ug/L	0.028	5	0.6 U	1.8	NS	NS	NS	NS
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.007	0.008	NS	NS	NS	NS
Barium, Total	mg/L	2.6	2	0.13	0.14	NS	NS	NS	NS
Chromium, Total	mg/L	0.11	0.1	0.002 U	0.003	NS	NS	NS	NS

B354-99-12c		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	5.4	6.5	5.6	6.5	6.9	6.2
trans-1,2-Dichloroethene	ug/L	120	100	0.5 U	0.9	0.5 U	0.5	0.6	0.5 U
Trichloroethene	ug/L	0.028	5	1	1.7	1.2	1.1	1.8	1.1
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.011	0.011	NA	NA	NA	NA
Barium, Total	mg/L	2.6	2	0.18	0.19	NA	NA	NA	NA

B354-99-13b		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	1.1	1.2	NS	NS	NS	NS
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.021	0.027	NS	NS	NS	NS
Barium, Total	mg/L	2.6	2	0.16	0.22	NS	NS	NS	NS

Table 3-2
Groundwater Detections 2003 - 2006
Main Post Landfill (FTRI-004)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

B354-99-13c		USEPA Region 9 PRGs	Date Sampled: USEPA MCLs/ Action Level	Mar-03	Sep-03	Apr-04	Oct-04	Apr-05	Sep-06
Volatiles	UNITS								
cis-1,2-Dichloroethene	ug/L	61	70	2.5	2.5	1.7	0.6 R	0.5 U	0.5 U
Metals	UNITS								
Arsenic, Total	mg/L	4.50E-05	0.01	0.051	0.05	0.052	0.039	0.04	NA
Barium, Total	mg/L	2.6	2	0.37	0.25	NA	NA	NA	NA
Chromium, Total	mg/L	0.11	0.1	0.036	0.002	NA	NA	NA	NA
Lead, Total	mg/L	3.60E-06	0.015	0.003 U	0.006	NA	NA	NA	NA

Notes:

1. All data screened against the USEPA MCLs/Action Levels (for lead). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

NS - not sampled (well was abandoned and plugged)

References for data: BMcD, 2003b; BMcD, 2004a; BMcD, 2004b; BMcD, 2005a; and BMcD, 2005b.

ug/L - micrograms per liter

mg/L - milligrams per liter

U - compound was not detected

R - data was rejected

Table 4-1
Soil Detections
Custer Hill Rubble Dump (FTRI-005)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	005-S01/SS01 8/8/2006 0 - 0.5 ft 06080658	005-S01/SS01 8/8/2006 0 - 0.5 ft 06080658R Reanalysis	005-S01/SS11 8/8/2006 0 - 0.5 ft 06080659 Duplicate	005-S01/SS11 8/8/2006 0 - 0.5 ft 06080659R Duplicate Reanalysis
Volatiles	UNITS						
Dichloromethane	ug/kg	9.1 / 21	150 / 230	6 U	NA	6 U	43.1 R
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	NA	NA	NA	NA
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	NA	NA	NA	NA
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	NA	NA	NA	NA
Chromium, Total	mg/kg	210 / 450	390 / 4,000	NA	NA	NA	NA
Lead, Total	mg/kg	400 / 800	400 / 1,000	NA	NA	NA	NA

Notes:

1. All data screened against the USEPA Region 9 PRGs (residential). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not analyzed

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

R - data was rejected

U - compound was not detected

Table 4-1
Soil Detections
Custer Hill Rubble Dump (FTRI-005)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

		Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	005-S01A/SS01 12/8/2006 0 - 0.5 ft 06120485	005-S01A/SS11 12/8/2006 0 - 0.5 ft 06120486 Duplicate
Volatiles	UNITS					
Dichloromethane	ug/kg		9.1 / 21	150 / 230	NA	NA
Metals, Total	UNITS					
Arsenic, Total	mg/kg		0.39 / 1.6	11 / 38	7.7	7.9
Barium, Total	mg/kg		5,400 / 67,000	5,500 / 140,000	190	170
Cadmium, Total	mg/kg		37 / 450	39 / 1,000	1	1.1
Chromium, Total	mg/kg		210 / 450	390 / 4,000	26.7	25.1
Lead, Total	mg/kg		400 / 800	400 / 1,000	16.8	16.7

Notes:

1. All data screened against the USEPA Region 9 PRGs (residential). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not analyzed

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

R - data was rejected

U - compound was not detected

Table 5-1
Wipe Detections
IACH Incinerator (FTRI-014)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Laboratory Number:		Screening Criteria (See Notes)	014-W01/WP01 8/8/2006 06080649	014-W01/WP11 8/8/2006 06080650 Duplicate	014-W02/WP01 8/8/2006 06080651	014-W03/WP01 8/8/2006 06080652	014-W04/WP01 8/8/2006 06080653
Metals, Total	UNITS						
Arsenic, Total	ug/100cm ²	NA	1.9	3.1	0.5 U	0.5 U	0.5 U
Barium, Total	ug/100cm ²	NA	5 U	5 U	5 U	5 U	10
Cadmium, Total	ug/100cm ²	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.57
Chromium, Total	ug/100cm ²	NA	1.4	2.5	0.9	0.8	2.3
Lead, Total	ug/100cm ²	4.3 ug/100cm ²	1.1	1	1.2	1.2	2.7

Notes:

Screening criteria for lead is based on the U.S. Department of Housing and Urban Development Lead Safe Housing Rule value of 40 ug/ft².
Screening levels are not available for arsenic, barium, cadmium, or chromium.

ug/100cm² - micrograms per 100 square centimeters
NA - not available
U - compound was not detected

Table 5-2
Wipe Detections
IACH Incinerator (FTRI-029)
Former Landfills / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

	Sample Point: Date Sampled: Laboratory Number:	Screening Criteria (See Notes)	014-W01/WP01 8/14/2006 06081171	014-W01/WP11 8/14/2006 06081172	014-W02/WP01 8/14/2006 06081173	014-W03/WP01 8/14/2006 06081174	014-W04/WP01 8/14/2006 06081175
Metals, Total	UNITS						
Mercury, Total	ug/100cm ²	1.57 ug/100cm ²	0.02 U	0.02 U	0.14	0.02 U	0.1

Notes:

Screening criteria for mercury is based on an evaluation performed by the World Trade Center Indoor Air Task Force Working Group (2003).

ug/100cm² - micrograms per 100 square centimeters
 NA - not available
 U - compound was not detected

Table 5-3
Soil Detections
IACH Incinerator (FTRI-014)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	014-S01/SS01 8/8/2006 0 - 0.5 ft 06080654	014-S02/SS01 8/8/2006 0 - 0.5 ft 06080655	014-S02/SS11 8/8/2006 0 - 0.5 ft 06080656 Duplicate	014-S03/SS01 8/8/2006 0 - 0.5 ft 06080657
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.7	1.1	1.2	3.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	50	40	30	150
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.52 U	0.51 U	0.51 U	0.68
Chromium, Total	mg/kg	210 / 450	390 / 4,000	3.2	3	2.2	15
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.6	7.4	34.3	19.1

Notes:

1. All data screened against the USEPA Region 9 PRGs (residential). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

mg/kg - milligrams per kilogram
U - compound was not detected

Table 6-1
Surface Soil Detections (LBA, 1995)
SEFL Incinerator (FTRI-029)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Analyte	Sample ID All samples have prefix SEFL-SB-									Kansas Dept. of Health and Environment Standards ^c	EPA Risk-Based Guidelines ^d
	3	45	47	52	62	63	64	66	79 ^b		
Metals: (milligrams per kilogram -mg/kg; parts per million -ppm)											
Antimony	<6	164	<5	<5	15	60	<6	<6	47	NAv	100-820
Arsenic	5 ^φ	41 ^φ	2 ^λ	2 ^λ	14 ^φ	24 ^φ	30 ^φ	31 ^φ	22 ^φ	NAv	0.4-310
Beryllium	<0.6	0.7 [†]	<0.5	<0.5	<0.6	1.7 ^ε	1.7 ^ε	4.7 ^ε	1.3 [†]	NAv	0.1-1000
Cadmium	0.7	13	<0.5	<0.5	9.5	7.3	7.6	4	6.9	NAv	100-1000
Chromium	11	94	4	5	60	73	19	16	70	200 ^ε -400 ^f	5100-1,000,000
Copper	11	1800	3	4	120	470	85	41	300	NAv	10,000-76,000
Lead	114	2000	14	600	1800	4900	71	58	3100	500	400 ^g -1000 ^h
Mercury	<0.1	0.8	<0.1	<0.1	0.2	0.1	<0.1	<0.1	0.2	20	310-610
Nickel	11	94	<4	5	32	45	44	59	41	NAv	5000 ^g -41,000
Silver	<1	28	<1	<1	5	7	<1	<1	6	NAv	1000-10,000
Zinc	77	6400	18	34	3100	4900	920	330	6500	NAv	80,000-310,000

Shaded areas represent those concentrations equal to or exceeding either the KDHE standard or the highest EPA Risk-Based concentration.

NAv: Not available.

φ: Sample concentration exceeded EPA Regions III, IX and X (10⁻⁶) Risk-Based Guideline for Arsenic as a carcinogen.

λ: Sample concentration exceeded EPA Regions III and X (10⁻⁶) Risk-Based Guideline for Arsenic as a carcinogen.

†: Sample concentration exceeded EPA Regions III and X (10⁻⁶) Risk-Based Guideline for Beryllium as a carcinogen.

ε: Sample concentration exceeded EPA Regions III, IX and X (10⁻⁶) Risk-Based Guideline for Beryllium as a carcinogen.

a: Appendix F contains an explanation of detection limits for these samples.

b: Duplicate of SEFL-SB-63.

c: Kansas Department of Health and Environment Bureau of Environmental Remediation, Interim Soil Clean-Up Standards, August 1993.

d: Risk-based guideline concentrations are based on a range to represent EPA Regions III, IX, and X from the following citations: Region II Risk-Based concentration Table, 2nd quarter 1994, Roy L. Smith, Senior Toxicologist - Technical Support Section; Region IX Regional Toxicologist; and Region X-Appendix II-Human Health Risk-based Preliminary Remediation Goals for Water and Soil, October 1992.

e: Hexavalent Chromium, residential/recreational areas.

f: Hexavalent Chromium, other areas.

g: EPA Directive # OSWER 9355.4-12, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities.

h: EPA Directive Number OSWER 9355.4-02, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites.

i: Soluble salts.

Table from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)

Table 6-2
Groundwater Screening Detections (LBA, 1995)
SEFL Incinerator (FTRI-029)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Analyte	Sample ID All samples have prefix SEFL-GS1-							Federal Standards/ State Guidelines		
	5	6	7	8	10	11	23 ^a	MCL	KAL	KNL
Volatiles: (micrograms per liter - µg/l)										
Benzene	<0.4	1	0.7	<0.4	<0.4	<0.4	<0.4	5	5	0.5
Chlorobenzene	3.9	3	0.8	<0.4	<0.4	<0.4	2.1	100	60	6
1,4-Dichlorobenzene	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	75	75	7.5
1,2-Dichloroethylene	1.7	<0.5	9.7	<0.5	2	7.8	<0.5	70	70	7
Ethylbenzene	<0.7	<0.7	<0.7	0.8	<0.7	<0.7	<0.7	700	680	68
Toluene	<0.4	<0.4	0.9	1.2	1.8	3.5	2	1000	2000	200
Vinyl Chloride	<0.7	<0.8	<0.8	<0.8	<0.8	<0.5	<0.8	2	2	0.2
m &/or p-Xylene	<0.6	<0.6	<0.6	2.7	<0.6	<0.6	<0.6	10000	440	44
o-Xylene	<0.6	<0.6	<0.6	1.4	<0.6	<0.6	<0.6	10000	440	44

a: Duplicate of SEFL-GS1-5.

MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

Table from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)

Table 6-3
Groundwater Detections (LBA, 1995)
SEFL Incinerator (FTRI-029)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Analyte	Sample ID Samples have prefix SEFL-94-, unless otherwise noted					Federal Standards/ State Guidelines		
	01-01	02-01	04-01 ^a	03-01	AEHA-6-94-01	MCL	KAL	KNL
Volatiles: (micrograms per liter - µg/l)								
1,2-Dichloroethylene	4.6	2.4	2.9	2.4	0.6	70	70	7
Metals: (milligrams per liter - mg/l)								
Arsenic (Total)	<0.01	<0.01	<0.01	<0.01	0.02	0.05	0.05	NAv
Lead (Soluble)	<0.003	0.012	0.011	<0.003	<0.003	0.015	0.050	NAv
Lead (Total)	0.013	0.028	0.17	0.016	<0.003	0.015	0.050	NAv
Antimony (Total)	<0.006	0.7	<0.006	<0.006	<0.006	0.006	0.143	NAv

Shaded areas represent those concentrations equal to or exceeding either the MCL and/or the KAL.

NAv: Not available.

a: Duplicate of SEFL-94-02-01.

MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

Table from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)

Table 6-4
Groundwater Detections
SEFL Incinerator (FTRI-029)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	029-SEFL94-01/GW01 8/11/2006 06081142	029-SEFL94-02/GW01 8/11/2006 06081143	029-SEFL94-02/GW11 8/11/2006 06081144 Duplicate
Volatiles	UNITS					
Chlorobenzene	ug/L	110	100	0.4 U	0.4 U	0.4 U
cis-1,2-Dichloroethene	ug/L	61	70	1	1.8	1.8
Metals, Total	UNITS					
Arsenic, Total	mg/L	0.000045	0.01	0.014	0.012	0.013
Barium, Total	mg/L	2.6	2	0.13	0.17	0.17
Metals, Dissolved	UNITS					
Arsenic, Dissolved	mg/L	0.000045	0.01	0.011	0.01 U	0.01 U
Barium, Dissolved	mg/L	2.6	2	0.13	0.16	0.16

Notes:

1. All data screened against the USEPA MCLs. All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

ug/L - micrograms per liter

mg/L - milligrams per liter

U - compound was not detected

Table 6-4
Groundwater Detections
SEFL Incinerator (FTRI-029)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	029-SEFL94-03/GW01 8/11/2006 06081145
Volatiles	UNITS			
Chlorobenzene	ug/L	110	100	2.3
cis-1,2-Dichloroethene	ug/L	61	70	1.7
Metals, Total	UNITS			
Arsenic, Total	mg/L	0.000045	0.01	0.01 U
Barium, Total	mg/L	2.6	2	0.43
Metals, Dissolved	UNITS			
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U
Barium, Dissolved	mg/L	2.6	2	0.41

Notes:

1. All data screened against the USEPA MCLs. All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

ug/L - micrograms per liter
mg/L - milligrams per liter
U - compound was not detected

Table 7-1
Groundwater Detections
SEFL (FTRI-036)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	036-DP01/GW01 8/7/2006 06080547	036-DP01/GW01 8/7/2006 06080547R Reanalysis	036-DP02/GW01 8/7/2006 06080544	036-DP03/GW01 8/7/2006 06080545
Volatiles	UNITS						
1,4-Dichlorobenzene	ug/L	0.5	75	1 UJ	NA	1 U	1.3
Chlorobenzene	ug/L	110	100	0.4 UJ	NA	0.4 U	0.6
cis-1,2-Dichloroethene	ug/L	61	70	1.6 J	NA	1.2	0.8
Trichloromethane	ug/L	0.17	80	1.3 J	NA	0.5 U	0.5 U
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.909 J	0.947 J	0.414 J	0.012
Barium, Total	mg/L	NA	NA	5.61	NA	4.78	1.14
Cadmium, Total	mg/L	NA	NA	0.04 J	0.036 J	0.03 J	0.003 U
Chromium, Total	mg/L	NA	NA	0.49 J	0.655 J	0.458 J	0.051
Lead, Total	mg/L	NA	NA	0.468 R	0.553 J	0.411	0.01
Mercury, Total	mg/L	NA	NA	0.0004	NA	0.0003	0.0002 U
Selenium, Total	mg/L	NA	NA	0.055 J	0.072 J	0.255 J	0.01 U
Metals, Dissolved	UNITS						
Arsenic, Dissolved	mg/L	4.50E-05	0.01	0.018	NA	0.017	0.01
Barium, Dissolved	mg/L	2.6	2	2.03	NA	1.68	0.92
Chromium, Dissolved	mg/L	0.11	0.1	0.005 U	NA	0.005 U	0.021
Lead, Dissolved	mg/L	3.60E-06	0.015	0.005 U	NA	0.005 U	0.005

Notes:

- All data screened against the USEPA MCLs/Action Levels. All exceedances are shaded.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels
 NA - not applicable / not analyzed

- ug/L - micrograms per liter
 mg/L - milligrams per liter
 J - qualified as estimated during the QC evaluation
 R - data was rejected
 U - compound was not detected

Table 7-1
Groundwater Detections
SEFL (FTRI-036)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	036-DP03/GW11 8/7/2006 06080546
Volatiles	UNITS			
1,4-Dichlorobenzene	ug/L	0.5	75	1.1
Chlorobenzene	ug/L	110	100	0.5
cis-1,2-Dichloroethene	ug/L	61	70	0.8
Trichloromethane	ug/L	0.17	80	0.5 U
Metals, Total	UNITS			
Arsenic, Total	mg/L	NA	NA	0.014 J
Barium, Total	mg/L	NA	NA	1.35
Cadmium, Total	mg/L	NA	NA	0.003 UJ
Chromium, Total	mg/L	NA	NA	0.094 J
Lead, Total	mg/L	NA	NA	0.025
Mercury, Total	mg/L	NA	NA	0.0002 U
Selenium, Total	mg/L	NA	NA	0.01 UJ
Metals, Dissolved	UNITS			
Arsenic, Dissolved	mg/L	4.50E-05	0.01	0.015
Barium, Dissolved	mg/L	2.6	2	1.22
Chromium, Dissolved	mg/L	0.11	0.1	0.015
Lead, Dissolved	mg/L	3.60E-06	0.015	0.005 U

Notes:

- All data screened against the USEPA MCLs/Action Levels. All exceedances are shaded.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels
 NA - not applicable / not analyzed

- ug/L - micrograms per liter
 mg/L - milligrams per liter
 J - qualified as estimated during the QC evaluation
 R - data was rejected
 U - compound was not detected

Table 8-1
Soil Detections
Old Whitside Incinerator (FTRI-037)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	037-SB01/SS01 8/10/2006 0 - 0.5 ft 06080940	037-SB01/SS02 8/10/2006 4 - 5 ft 06080941	037-SB01/SS22 8/10/2006 4 - 5 ft 06080942 Duplicate	037-SB02/SS01 8/10/2006 0 - 0.5 ft 06080943
Metals, Total	UNITS						
Lead, Total	mg/kg	400 / 800	400 / 1,000	83.8	15.3	13.6	21.4

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

mg/kg - milligrams per kilogram

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

Table 8-1
Soil Detections
Old Whitside Incinerator (FTRI-037)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	037-SB02/SS02 8/10/2006 4 - 5 ft 06080944
Metals, Total	UNITS			
Lead, Total	mg/kg	400 / 800	400 / 1,000	13.9

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

mg/kg - milligrams per kilogram

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

Table 9-1
Soil Detections
Inactive Landfills - Camp Whitside (FTRI-052)
Former Landfill / Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	052-S01/SS01 8/8/2006 0 - 0.5 ft 06080648	052-S02/SS01 8/8/2006 0 - 0.5 ft 06080647	052-S03/SS01 8/8/2006 0 - 0.5 ft 06080646
Metals, Total	UNITS					
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7.3	4	3.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	120	120	60
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.75	0.72	1 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	20	14	10
Lead, Total	mg/kg	400 / 800	400 / 1,000	16.6	14	11

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

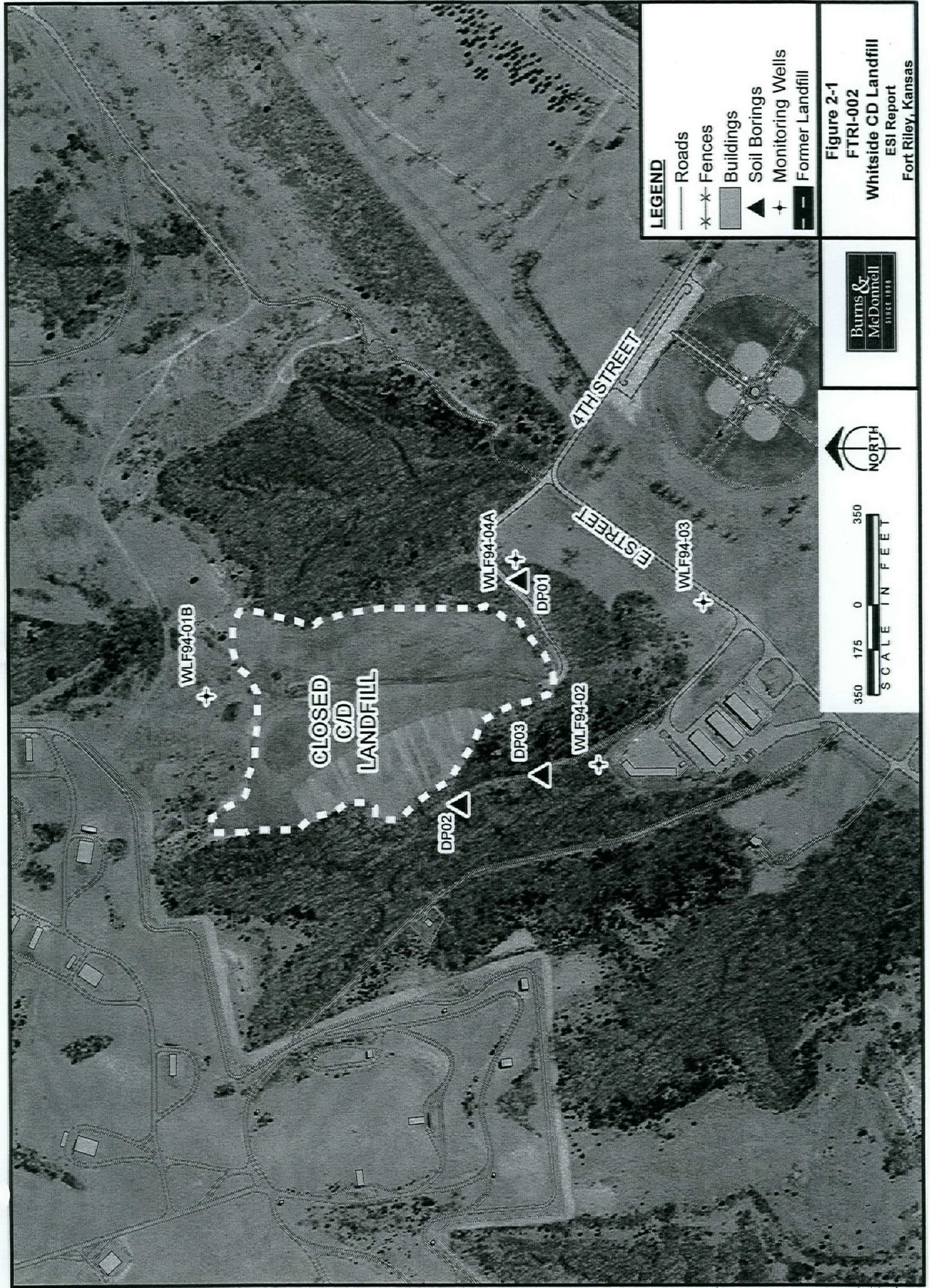
res/ind - residential / industrial

ft - feet

mg/kg - milligrams per kilogram

U - compound was not detected

Figures



- LEGEND**
- Roads
 - ✖ ✖ Fences
 - ▭ Buildings
 - ▲ Soil Borings
 - + Monitoring Wells
 - ▬ Former Landfill

Figure 2-1
 FTRI-002
 Whitside CD Landfill
 ESI Report
 Fort Riley, Kansas











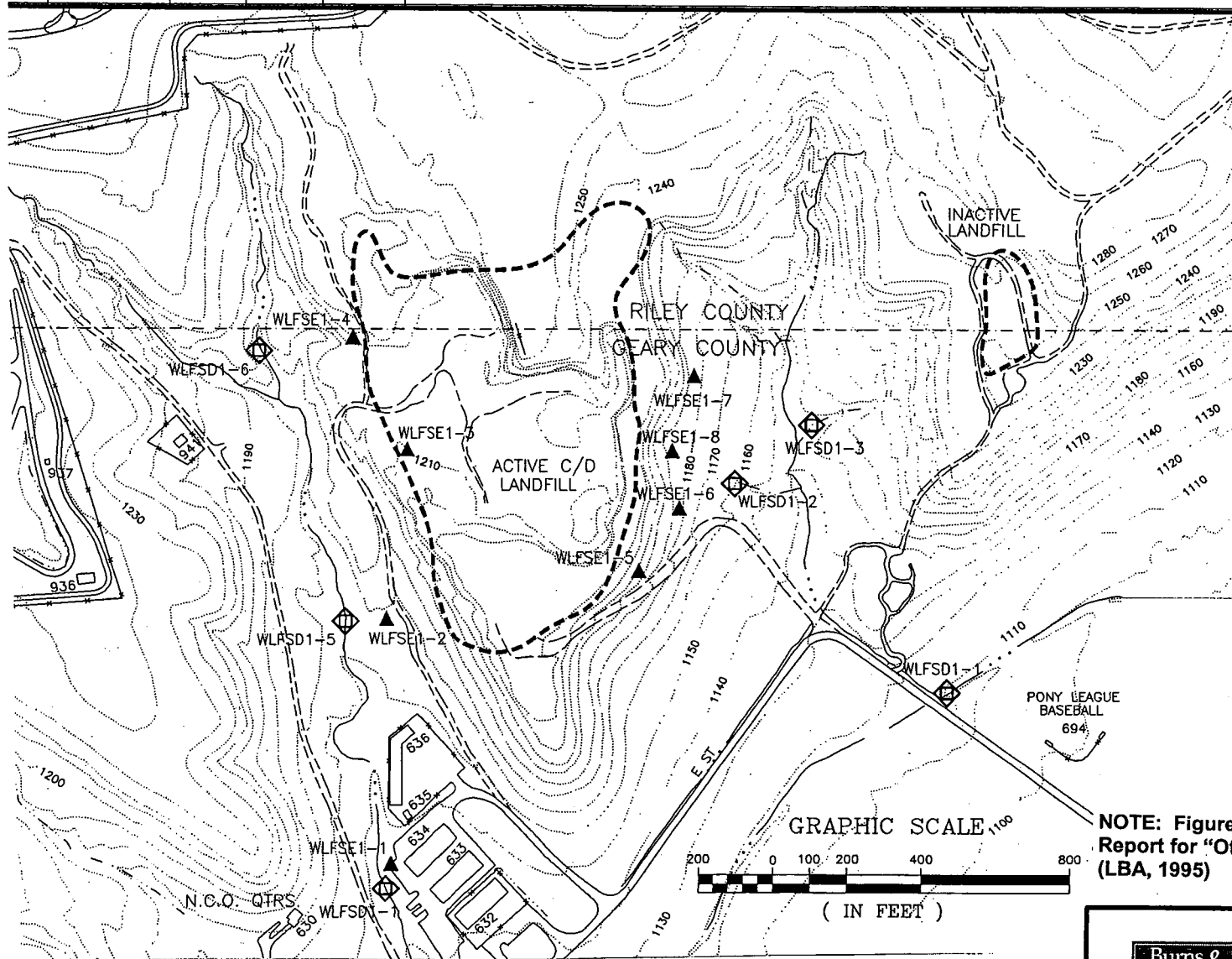
ANALYTES IN ug/L	LOCATION	WLFSE1-3	WLFSE1-4	WLFSD1-1
FLUORANTHENE	9300	-	-	-
4,4'-DDT	30	-	-	-
DIELDRIN	30	7.3	-	-
CHLORDANE	-	-	-	44

ALL OTHER LOCATIONS WERE NON-DETECT FOR VOLATILES, SEMIVOLATILES, PESTICIDES/PCBs, & HERBICIDES.
ALL DETECTIONS OF METALS WERE BELOW KDHE STANDARDS & THE HIGHEST EPA RISK-BASED GUIDELINE.



LEGEND

-  SEDIMENT SAMPLE
-  SEEP SOIL SAMPLE
-  ELEVATION CONTOUR
-  DRAINAGE
-  BUILDING
-  AREA OF CONCERN
-  ROAD
-  FENCE LINE



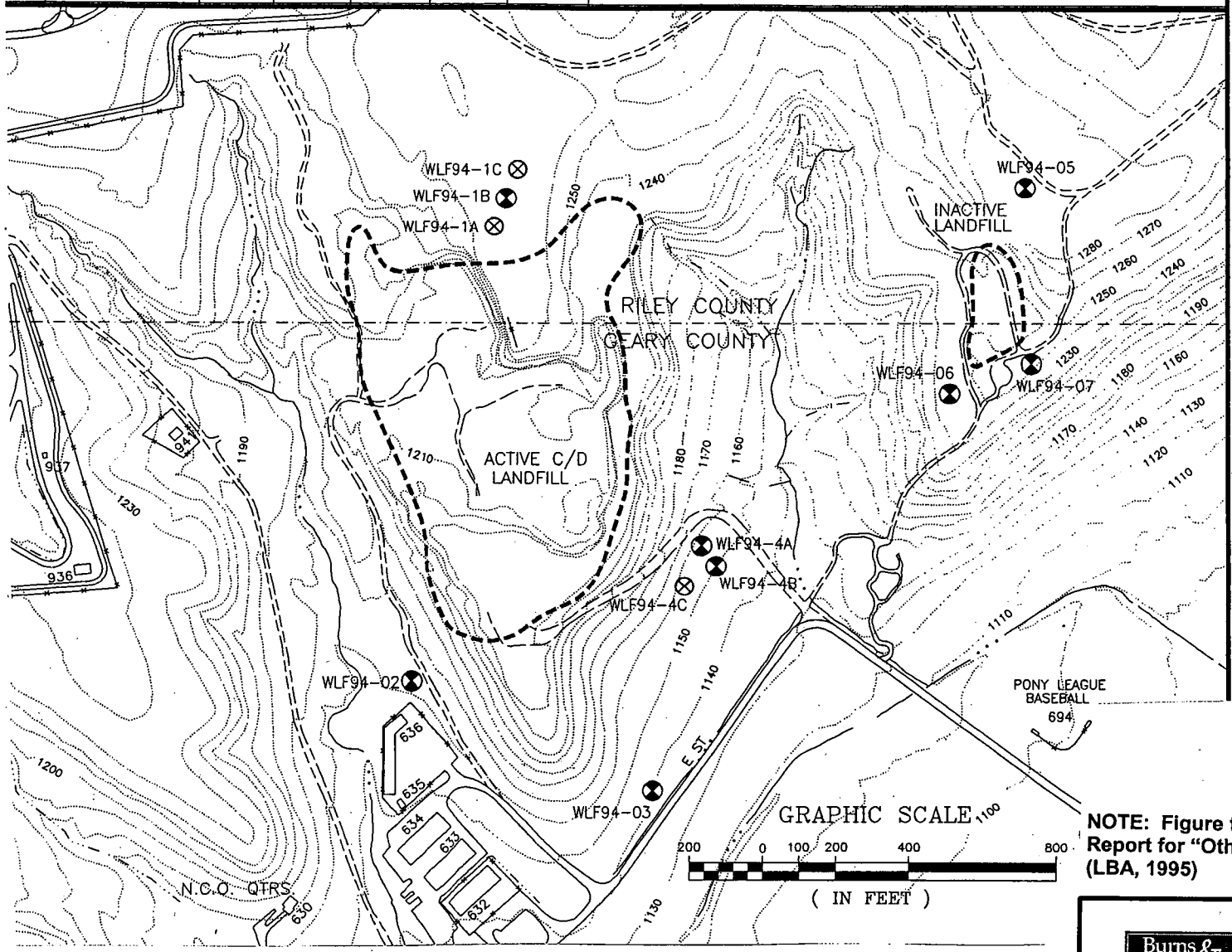
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Figure 2-2
FTRI-002 Surface Soil
Detections (LBA 1995)
ESI Report
Fort Riley, Kansas

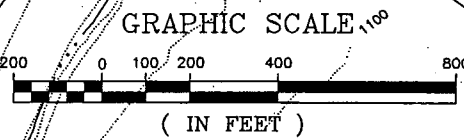
ANALYTES ug/Kg	LOCATION	WLF94-1B	WLF94-02	WLF94-03	WLF94-4A	WLF94-4B
TETRACHLOROMETHANE		-	3.3	1.1	1.5	3.1
BIS(2-ETHYLHEXYL) PHTHALATE		43	-	-	-	-

ALL OTHER WELLS WERE NON-DETECT FOR VOLATILES & SEMIVOLATILES.
 ALL WELLS WERE NON-DETECT FOR HERBICIDES & PESTICIDE/PCBs.
 NO DETECTION OF ANY METAL EXCEEDED THE KHDE STANDARDS
 OR THE HIGHEST EPA RISK-BASED GUIDELINE.



LEGEND

- ⊗ SOIL BORING (APPROXIMATE LOCATION)
- ⊕ GROUNDWATER MONITORING WELL (APPROXIMATE LOCATION)
- ELEVATION CONTOUR
- - - - DRAINAGE
- ▭ BUILDING
- - - - AREA OF CONCERN
- == ROAD
- * - FENCE LINE

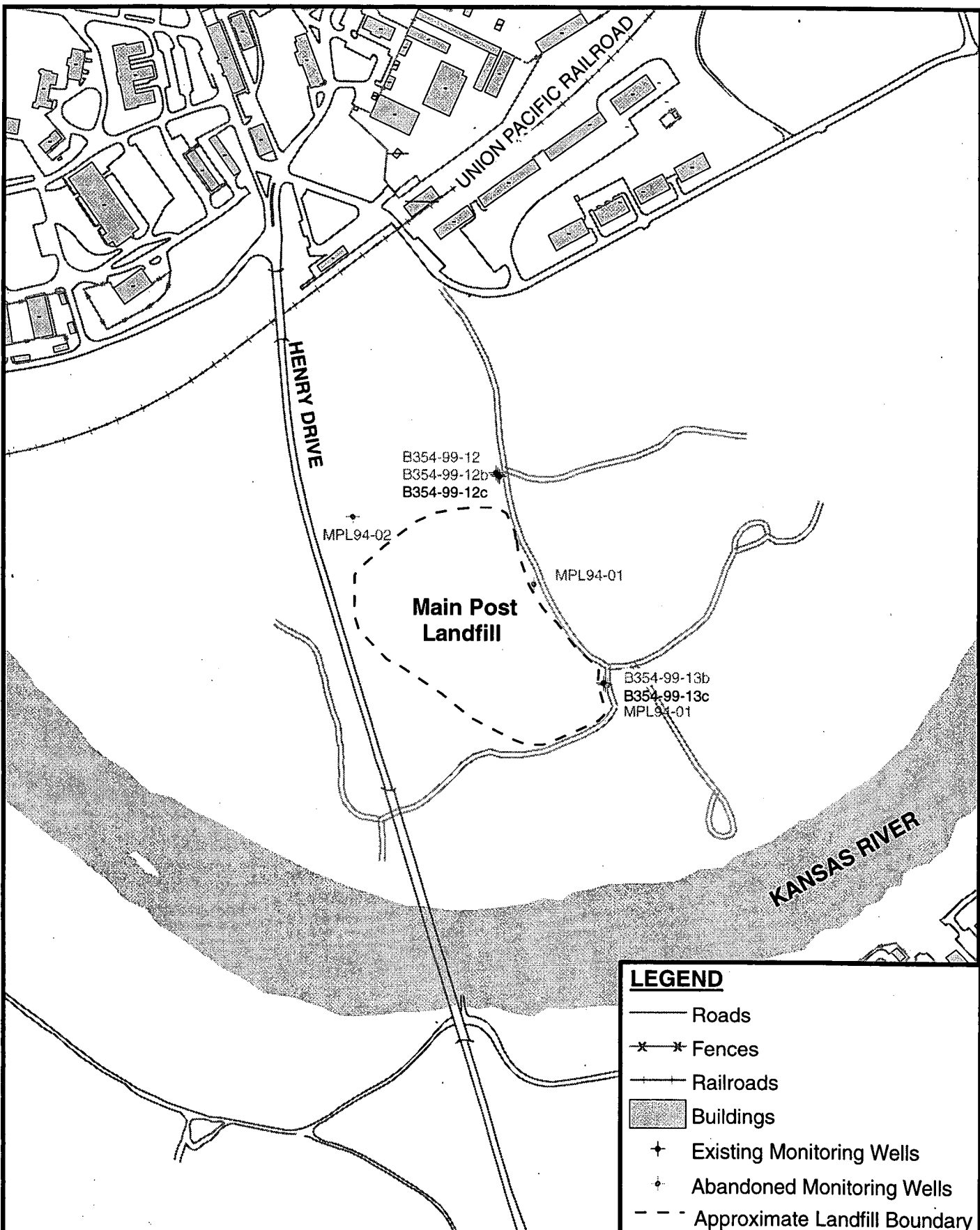


NOTE: Figure from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)



Figure 2-3
FTRI-002 Groundwater
Detections (LBA 1995)
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- * * Fences
- +— Railroads
- ▨ Buildings
- + Existing Monitoring Wells
- ◇ Abandoned Monitoring Wells
- - - Approximate Landfill Boundary

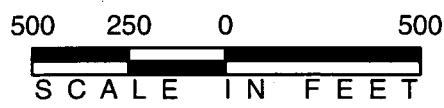
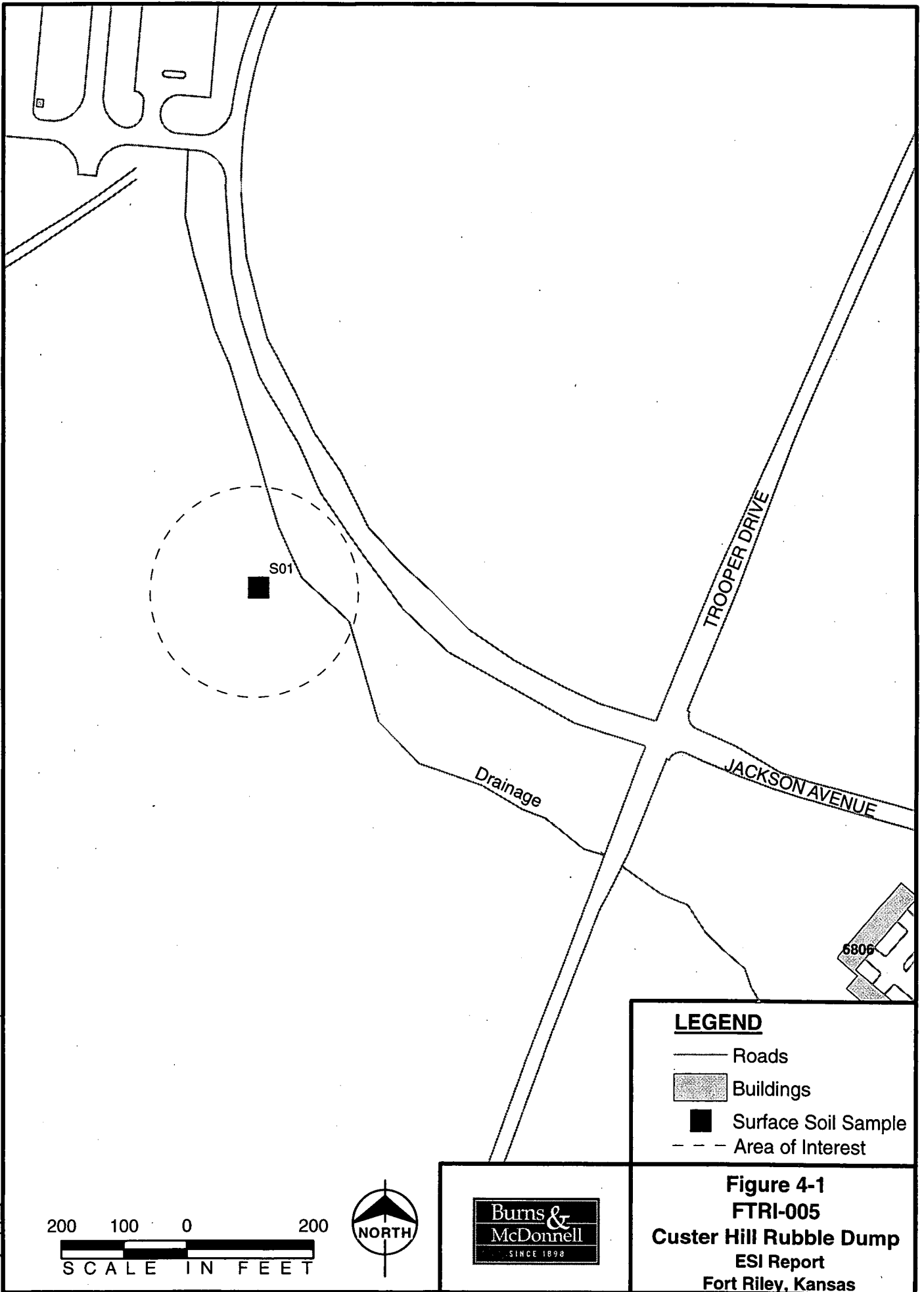


Figure 3-1
FTRI-004
Main Post Landfill
ESI Report
Fort Riley, Kansas

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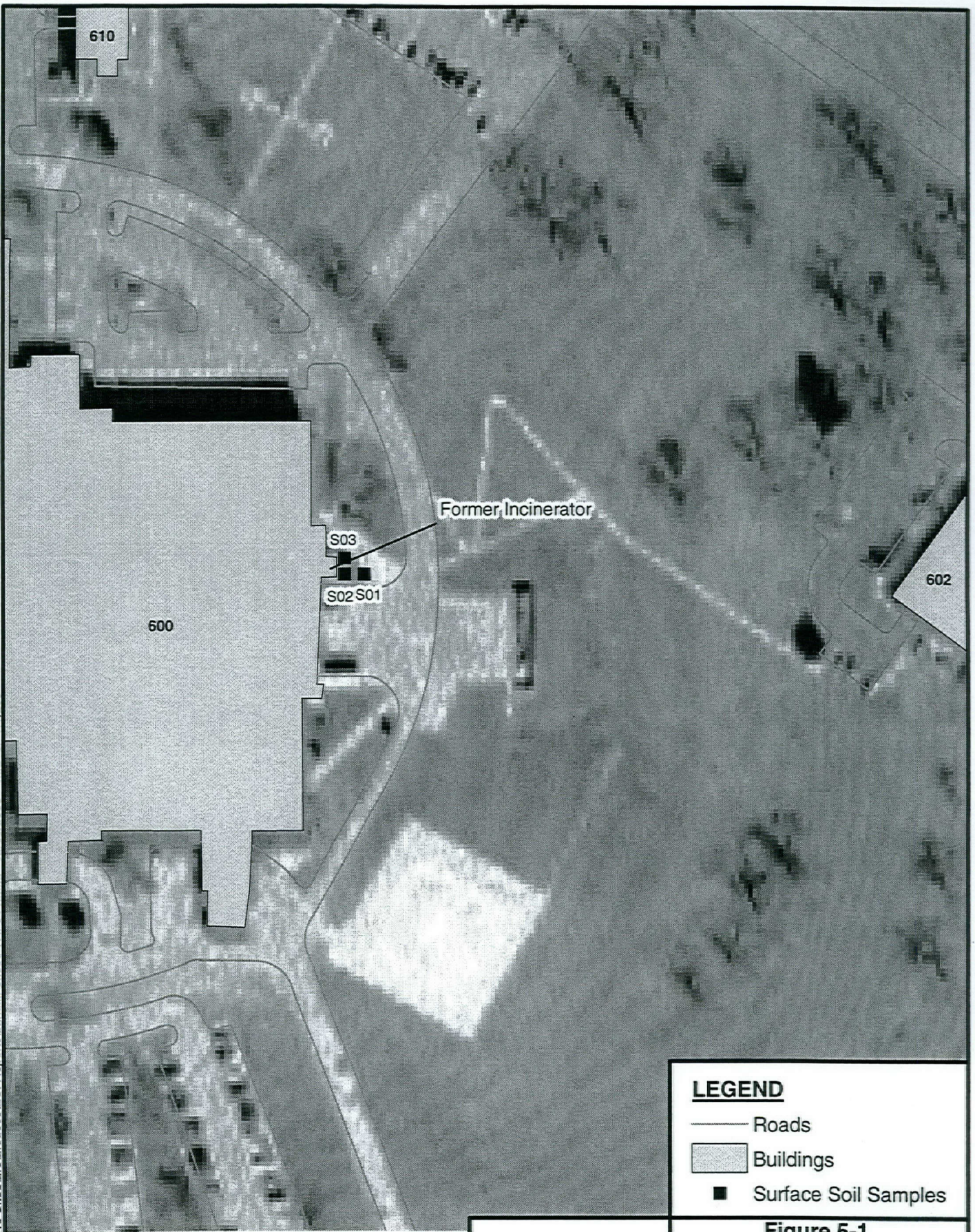
LEGEND

- Roads
- ▨ Buildings
- Surface Soil Sample
- - - Area of Interest

Figure 4-1
FTRI-005
Custer Hill Rubble Dump
ESI Report
Fort Riley, Kansas



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LEGEND

- Roads
- ▭ Buildings
- Surface Soil Samples

Figure 5-1
FTRI-014
 Irwin Army Community Hospital
 Incinerator
 ESI Report
 Fort Riley, Kansas

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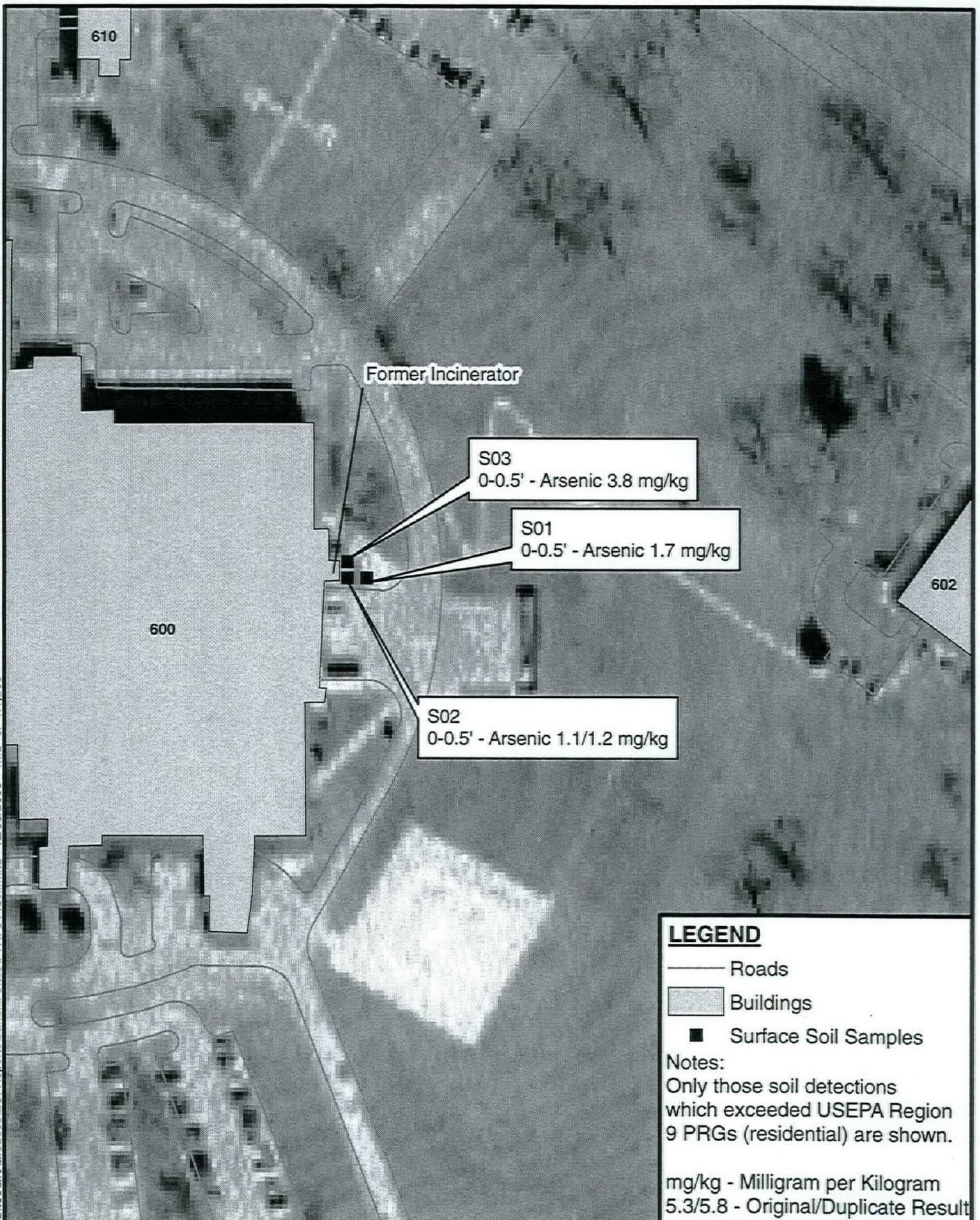
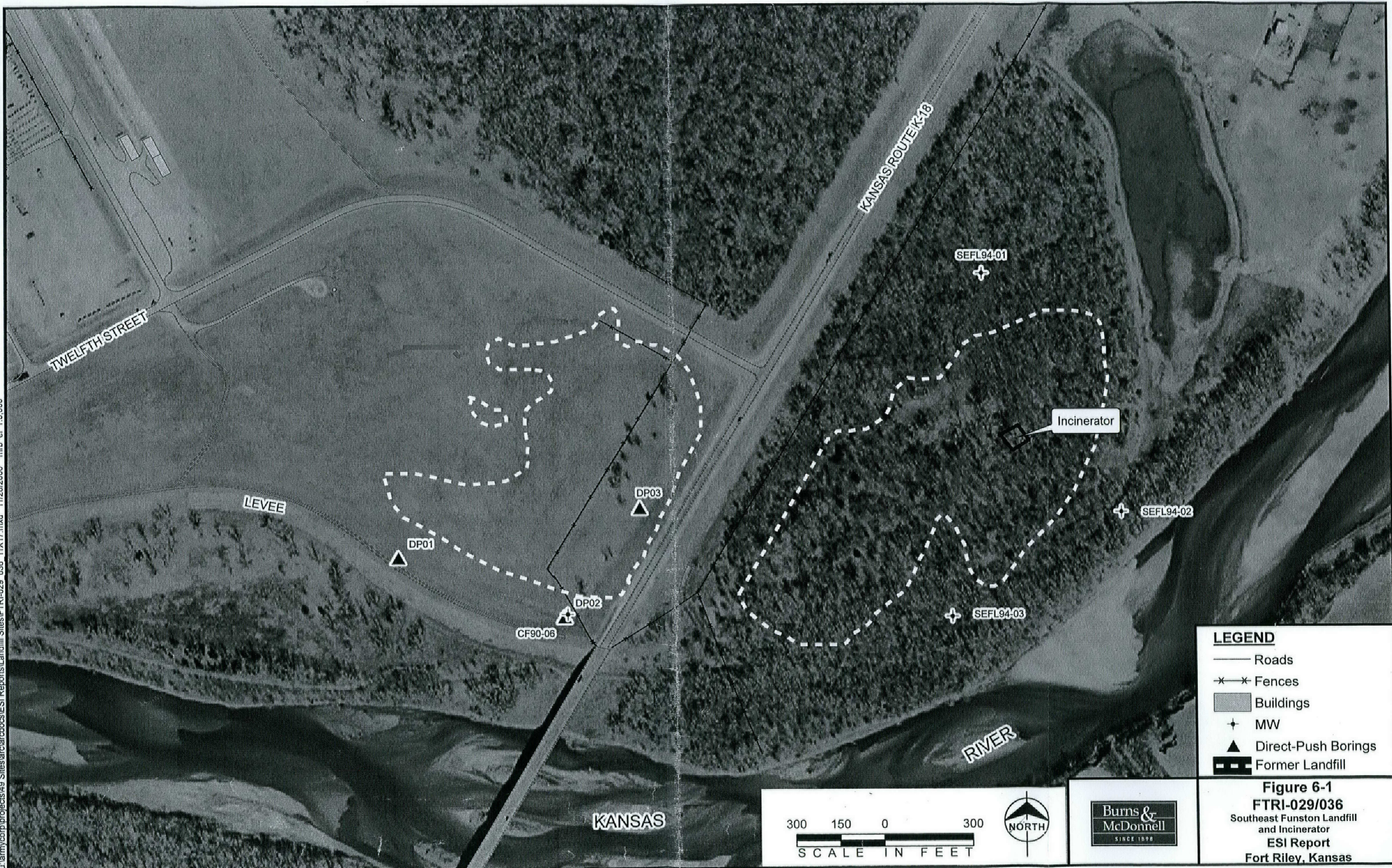


Figure 5-2
FTRI-014
ESI Soil Detections
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- *- Fences
- ▭ Buildings
- + MW
- ▲ Direct-Push Borings
- - - Former Landfill

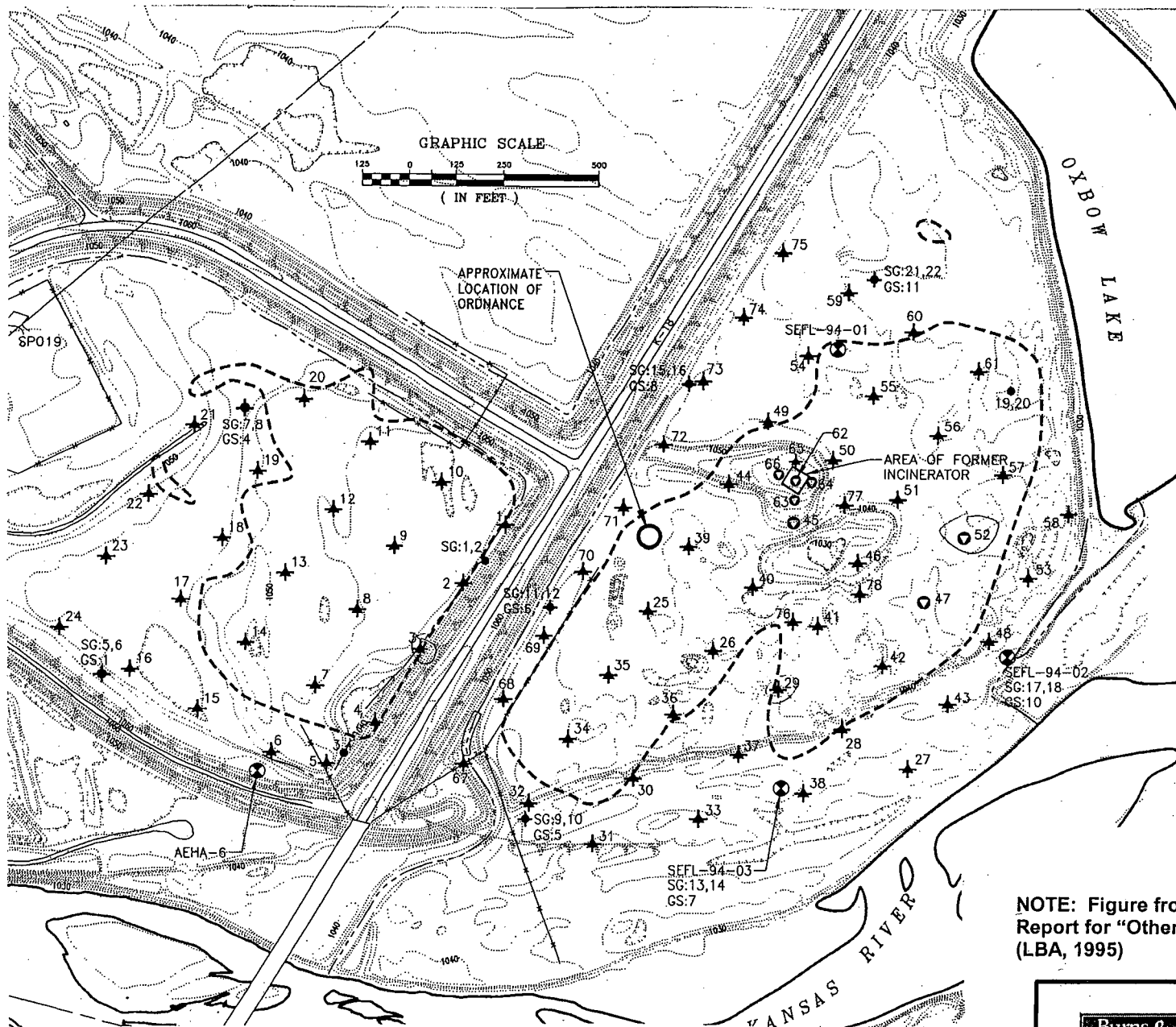
Figure 6-1
FTRI-029/036
Southeast Funston Landfill
and Incinerator
ESI Report
Fort Riley, Kansas

300 150 0 300
SCALE IN FEET

NORTH

Burns & McDonnell
SINCE 1998

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N

LEGEND

- ⊗ MONITORING WELL
- ◆ SOIL GAS AND GROUNDWATER SCREENING SAMPLE LOCATION
- SOIL GAS SAMPLE LOCATION
- SURFACE SOIL SAMPLE LOCATION (0-1 ft.) (LAB AND FIELD XRF)
- ✦ XRF SOIL SAMPLE LOCATION
- SG SOIL GAS
- GS GROUNDWATER SCREENING
- ELEVATION CONTOUR
- - - DRAINAGE
- ▭ BUILDING
- ⋯ PROBABLE LANDFILL BOUNDARY
- == ROAD
- x-x- FENCE LINE
- ⋯ LEVEE

NOTE:

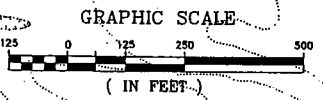
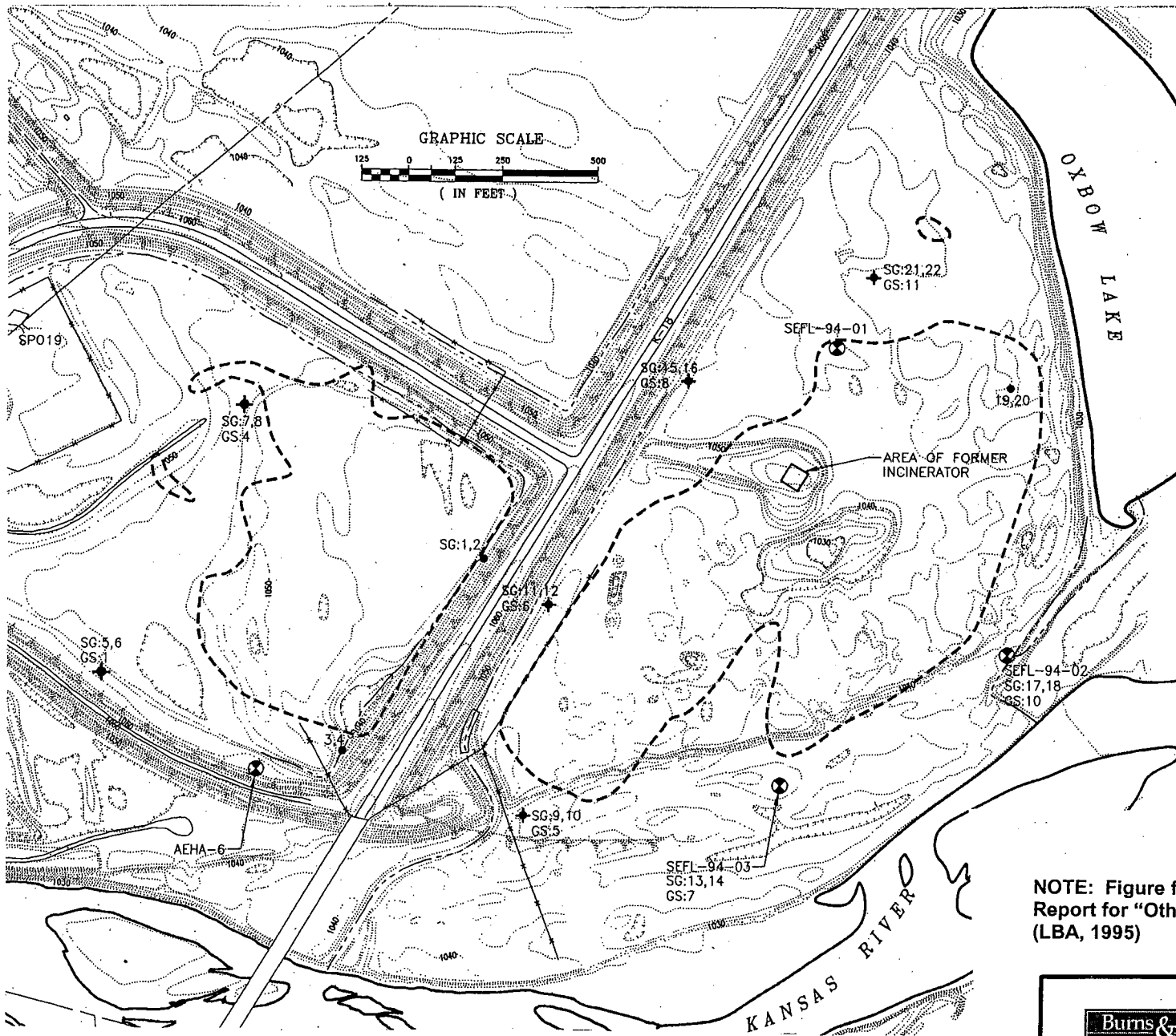
- ◆ GROUNDWATER SCREENING SAMPLES HAVE PREFIX (SEFLGS1-)
- SOIL GAS SAMPLES HAVE PREFIX (SEFLSG1-)
- SOIL SAMPLES HAVE PREFIX (SEFLSB- THESE ARE LAB SPLITS OF THE XRF SAMPLES)

NOTE: Figure from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)



Figure 6-2
 FTRI-029/036 Soil Sampling
 Locations (LBA, 1995)
 ESI Report
 Fort Riley, Kansas

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LEGEND

- MONITORING WELL
- ◆ SOIL GAS AND GROUNDWATER SCREENING SAMPLE LOCATION
- SOIL GAS SAMPLE LOCATION
- SG SOIL GAS
- GS GROUNDWATER SCREENING
- ELEVATION CONTOUR
- - - DRAINAGE
- ▭ BUILDING
- [- - -] PROBABLE LANDFILL BOUNDARY
- == ROAD
- x - x - FENCE LINE
- ▬▬▬ LEVEE

NOTE:

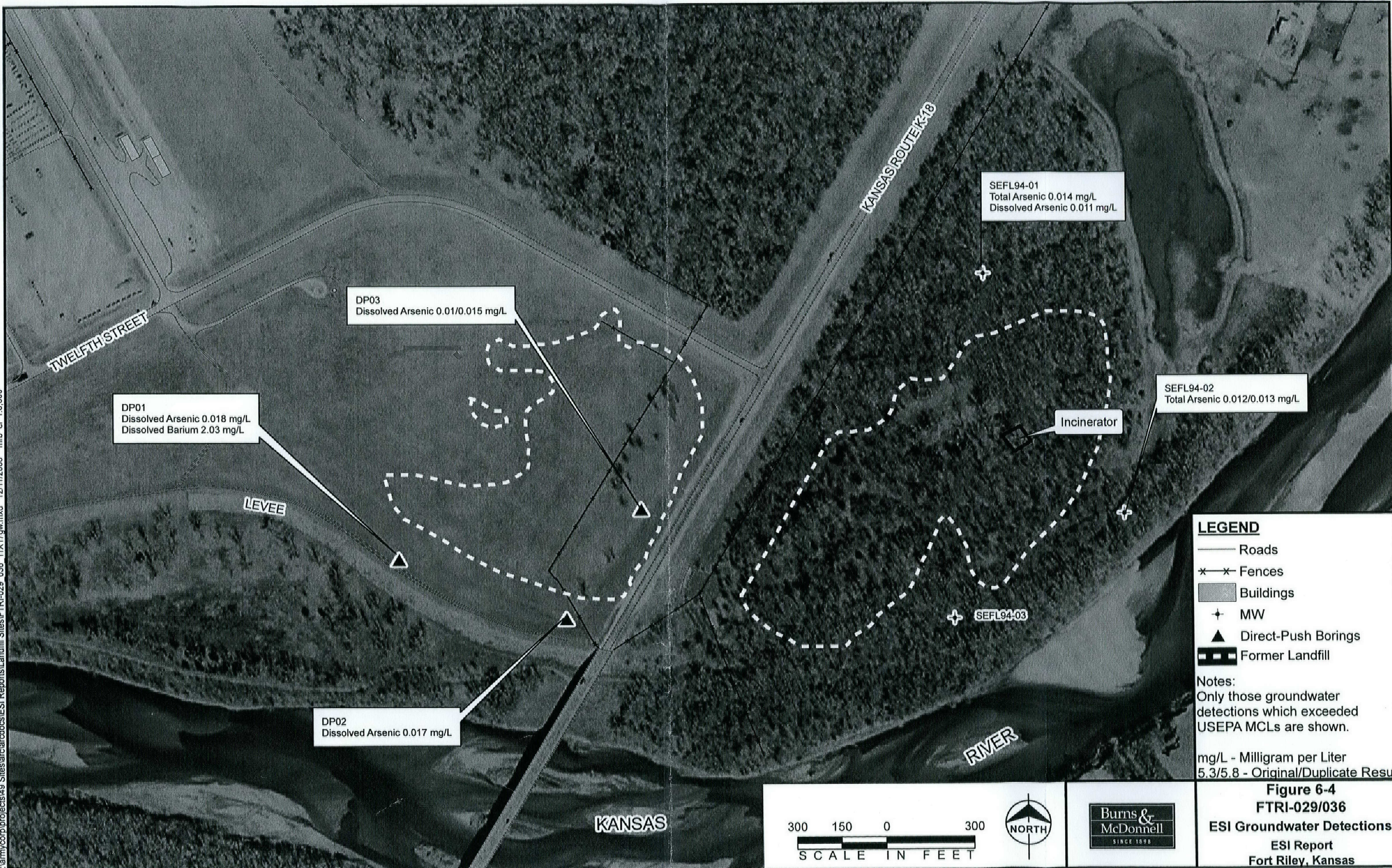
- ◆ GROUNDWATER SCREENING SAMPLES HAVE PREFIX (SEFLGS1-)
- SOIL GAS SAMPLES HAVE PREFIX (SEFLSG1-)
- SOIL SAMPLES HAVE PREFIX (SEFLSB- THESE ARE LAB SPLITS OF THE XRF SAMPLES)

NOTE: Figure from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)



Figure 6-3
 FTRI-029/036 Groundwater Screening Locations (LBA, 1995)
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- ✕ ✕ Fences
- ▭ Buildings
- + MW
- ▲ Direct-Push Borings
- ▭ Former Landfill

Notes:
 Only those groundwater detections which exceeded USEPA MCLs are shown.

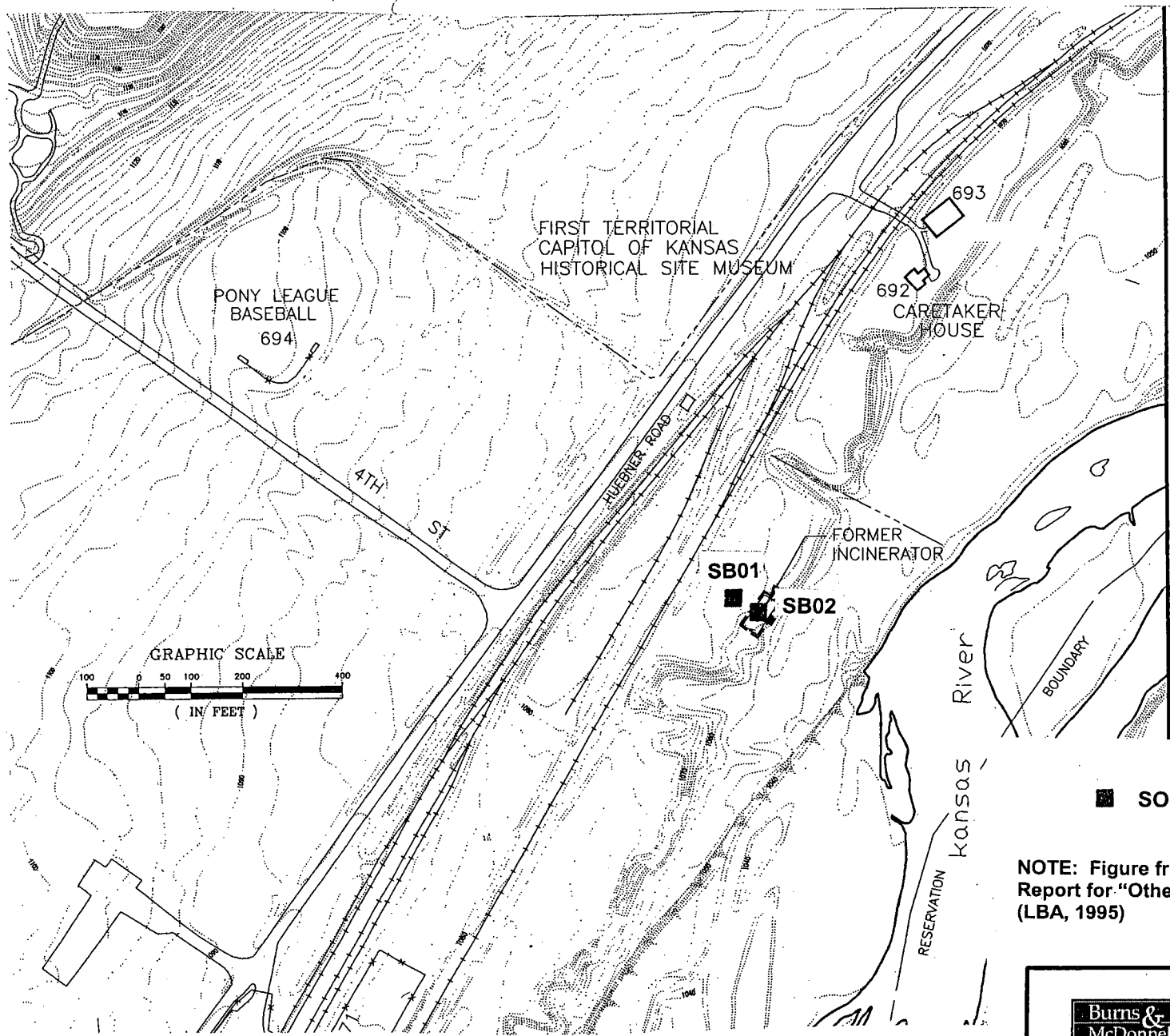
mg/L - Milligram per Liter
 5.3/5.8 - Original/Duplicate Result

300 150 0 300
 SCALE IN FEET

NORTH

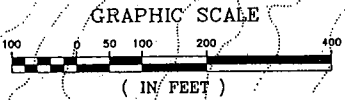
Burns & McDonnell
 SINCE 1998

Figure 6-4
FTRI-029/036
ESI Groundwater Detections
ESI Report
Fort Riley, Kansas



LEGEND

- ELEVATION CONTOUR
- DRAINAGE
- BUILDING
- AREA OF CONCERN
- ROAD
- FENCE LINE
- LEVEE

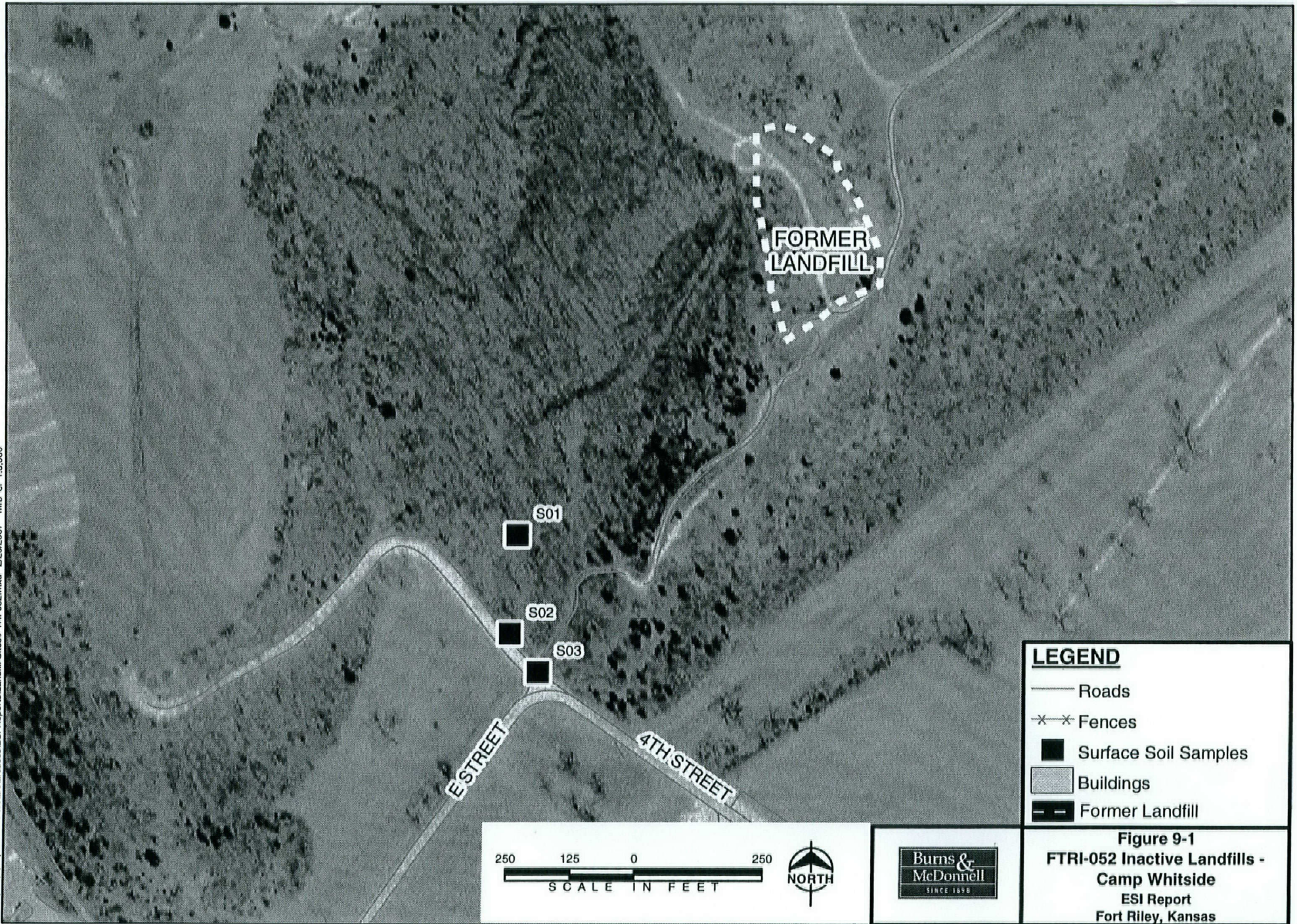


SOIL BORING

NOTE: Figure from Draft Final Site Investigation Report for "Other Sites" at Fort Riley, Kansas (LBA, 1995)



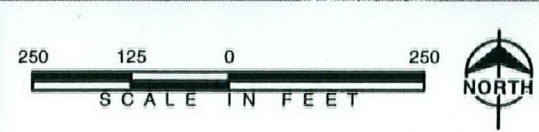
Figure 8-1
FTRI-037
Old Whitside Incinerator
ESI Report
Fort Riley, Kansas

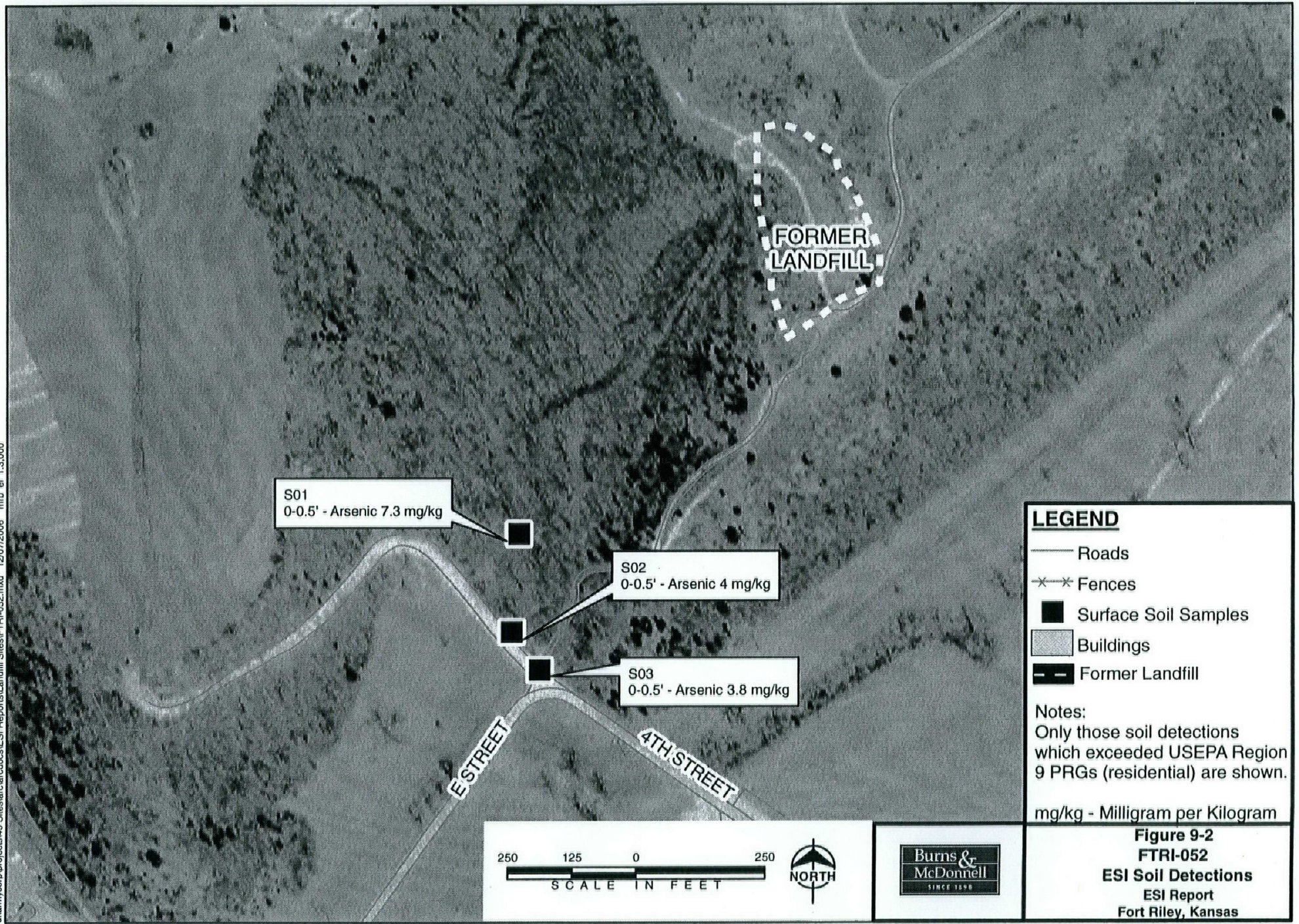


LEGEND

- Roads
- x-x Fences
- Surface Soil Samples
- ▨ Buildings
- - - Former Landfill

Figure 9-1
FTRI-052 Inactive Landfills -
Camp Whiteside
ESI Report
Fort Riley, Kansas



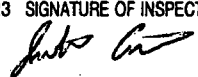


**Appendix A
Boring Logs**

**Boring Logs
Whitside C/D Landfill (FTRI-002)**

HTW DRILLING LOG

HOLE NO.
FTRI-002 DP01
SHEET 1
OF 1 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR NA				
3. PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley				
5. NAME OF DRILLER NA		6. MANUFACTURER'S DESIGNATION OF DRILL NA				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Auger		8. HOLE LOCATION NA			
			9. SURFACE ELEVATION NA			
			10. DATE STARTED 8/8/06			
			11. DATE COMPLETED 8/8/06			
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA				
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA				
14. TOTAL DEPTH OF HOLE 1.8		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA				
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
0	0	0	0			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	2	—	—	Pesticides	Fluoranthene	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR 		
	NA	Bentonite	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	SILT, dark brown (3/3 104R) soft damp, nonplastic	0	0.5 / 0.5	5501 0-0.5		1505
			0	0.5 / 0.5			1508
		CLAY, dark brown (3/3 104R) medium, damp, medium plastic w/ gravel	0	0.5 / 0.5			1511
	2	Bottom of hole Refusal	0	0.3 / 0.3			1515
							Offset 3 times hit refusal at all locations w/ 18-20"

HTW DRILLING LOG

HOLE NO.
FTRI-002 DPOZ
 SHEET 1
 OF 1 SHEETS

1. COMPANY NAME Burns & McDermott		2. DRILLING SUBCONTRACTOR EPS				
3. PROJECT 40747 ESI 49 sites		4. LOCATION Fort Riley				
5. NAME OF DRILLER Dennis Eller		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 5400		8. HOLE LOCATION NA			
	4' macrocore					
9. SURFACE ELEVATION NA		10. DATE STARTED 8/7/06	11. DATE COMPLETED 8/7/06			
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA				
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA				
14. TOTAL DEPTH OF HOLE 5'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA				
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0			
20. SAMPLES FOR CHEMICAL ANALYSIS 4	VOC —	METALS —	OTHER (SPECIFY) Pesticide 2	OTHER (SPECIFY) Fluoranthene 2	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE NA					
BACKFILLED Bentonite		MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR <i>Just</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (4/310YR) soft dry, non plastic w/ gravel	0	1	5506 0-6"		1325
	1	CLAY, brown (4/310YR) soft damp, medium plasticity					
	2	CLAY, very dark brown; soft damp, non plastic, w/ gravel	0	39 4			
	3		0				
	4	CLAY, yellowish brown (5/410YR) damp, medium, non plastic	0		5802 4-5'		1330
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRI-002 DP03
SHEET 1
OF 1 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>NA</i>				
3. PROJECT <i>40747 ESI 49 sites</i>		4. LOCATION <i>Fort Riley</i>				
5. NAME OF DRILLER <i>NA</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>NA</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Hand Auger</i>					
	8. HOLE LOCATION <i>NA</i>					
	9. SURFACE ELEVATION <i>NA</i>					
	10. DATE STARTED <i>8/8/06</i>	11. DATE COMPLETED <i>8/8/06</i>				
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>				
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. TOTAL DEPTH OF HOLE <i>5</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<i>4</i>	<i>—</i>	<i>—</i>	<i>Pesticides 2</i>	<i>Fluoranthene 2</i>	
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		
	<i>Bentonite</i>	<i>NA</i>	<i>NA</i>			

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>SILT, dark brown (3/8 10YR) soft, damp, non plastic</i>	<i>0</i>	<i>0.6 / 0.5</i>	<i>5501 0-0.5</i>		<i>1420</i>
			<i>0</i>	<i>0.5 / 0.5</i>			<i>1423</i>
			<i>0</i>	<i>0.5 / 0.5</i>			<i>1426</i>
	2		<i>0</i>	<i>0.4 / 0.5</i>			<i>1430</i>
		<i>CLAY, dark brown (3/8 10YR) soft damp, medium plastic</i>	<i>0</i>	<i>0.5 / 0.5</i>			<i>1432</i>
			<i>0</i>	<i>0.5 / 0.5</i>			<i>1434</i>
	3		<i>0</i>	<i>0.3 / 0.5</i>			<i>1436</i>
			<i>0</i>	<i>0.4 / 0.5</i>			<i>1437</i>
			<i>0</i>	<i>0.5 / 0.5</i>	<i>DP01 4-5</i>		<i>1438</i>
	5	<i>0</i>	<i>0.3 / 0.5</i>			<i>1440</i>	

Boring Logs
Old Whitside Incinerator (FTRI-037)

HTW DRILLING LOG

HOLE NO.
FTRI-037 5801
SHEET 1
OF 1 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR NA	
3. PROJECT 40747 ESI 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER NA		6. MANUFACTURER'S DESIGNATION OF DRILL NA	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Augers		8. HOLE LOCATION NA
			9. SURFACE ELEVATION NA
			10. DATE STARTED 8/10/06
			11. DATE COMPLETED 8/10/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 5		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	0	0	0
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)
	2	lead 2	—
22. DISPOSITION OF HOLE			21. TOTAL CORE RECOVERY %
NA			—
BACKFILLED			23. SIGNATURE OF INSPECTOR
Bentonite			<i>[Signature]</i>
MONITORING WELL			NA
OTHER (SPECIFY)			NA

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	SILT, dark brown (3/3 10YR) damp soft non plastic	0	0.6 / 0.5	5501		1520
		SAND, brown (4/3 10YR) damp, loose fine-coarse grained well sorted	0	0.5 / 0.5			1522
		CLAY, dark brown (3/3 10YR) damp soft medium plastic	0	0.5 / 0.5			1525
	2		0	0.4 / 0.5			1527
			0	0.3 / 0.5			1529
	3		0	0.4 / 0.5			1532
			0	0.5 / 0.5			1534
	4	CLAY, dark brown (3/3 10YR) damp, medium, medium plastic	0	0.5 / 0.5			1536
			0	0.5 / 0.5	5502		1538
	5		0	0.5 / 0.5			1540

HTW DRILLING LOG

HOLE NO.
FTRI-037 5802
SHEET 1
OF 1 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR NA	
3. PROJECT 40747		4. LOCATION Fort Riley	
5. NAME OF DRILLER NA		6. MANUFACTURER'S DESIGNATION OF DRILL NA	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Hand Auger		8. HOLE LOCATION NA
			9. SURFACE ELEVATION NA
			10. DATE STARTED 8/10/06
			11. DATE COMPLETED 8/10/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 5		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 2	VOC —	METALS Lead 2	OTHER (SPECIFY) —
			OTHER (SPECIFY) —
21. TOTAL CORE RECOVERY %			OTHER (SPECIFY) —
			OTHER (SPECIFY) —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA
			23. SIGNATURE OF INSPECTOR <i>Just</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	SILT, dark brown (3/3104R) soft, damp, non plastic	0	0.5 / 0.5	5501		1545
			0	0.5 / 0.5			1547
			0	0.5 / 0.5			1549
	2	CLAY, dark brown (3/3104R) medium, damp, medium plasticity	0	0.5 / 0.5			1551
			0	0.5 / 0.5			1553
	3		0	0.4 / 0.5			1555
			0	0.4 / 0.5			1556
	4		0	0.5 / 0.5			1558
			0	0.3 / 0.5	5502		1559
	5		0	0.3 / 0.5			1600

Boring Log
Inactive Landfills – Camp Whiteside (FTRI-052)

HTW DRILLING LOG

HOLE NO.
FTRI-052 DPOI
 SHEET 1
 OF 3 SHEETS

1 COMPANY NAME Burns + McDonnell		2 DRILLING SUBCONTRACTOR EPS				
3 PROJECT 40747 ESI 49 sites		4 LOCATION Fort Riley				
5 NAME OF DRILLER Dennis Eller		6 MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push				
7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 5400		8 HOLE LOCATION NA			
	4' macrocore					
9 SURFACE ELEVATION NA		10. DATE STARTED 8/7/06	11. DATE COMPLETED 8/7/06			
12 OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA				
13 DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA				
14 TOTAL DEPTH OF HOLE 17'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA				
18 GEOTECHNICAL SAMPLES 0	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0			
20 SAMPLES FOR CHEMICAL ANALYSIS 0	VOC —	METALS —	OTHER (SPECIFY) —	OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE NA					
BACKFILLED Bentonite		MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (1/3 10 YR) soft dry w/ gravel, no plastic	0				
	2	cobble	0	3.2 / 4			
	3	gravel	0				
	4		0				
	5		0				1455

HTW DRILLING LOG

HOLE NO.
FTRE-052 DP01
SHEET **02**
OF **3** SHEETS

PROJECT
40747 ESI 49 piles

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6		0	3.2 / 4			
	7		0				
	8	CLAY, brown (4/3 10YR) damp, medium, trace plastic	0				1510
	9		0	1.1 / 2			
	10		0				1515
	11		0	3.7 / 4			
	12	CLAY, brown (4/3 10YR) damp, stiff, trace plastic	0				
	13		0				
	14		0				1520



HTW DRILLING LOG

HOLE NO.
FTR-052 DP01
 SHEET **03**
 OF **3** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR


ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	15		0	1.0 / 2			
	16		0				1525
	17		0	0.6 / 1			1530
		Refusal Bottom of hole					
	18						
	19						

**Appendix B
Survey Data**

2319 N. Jackson, PO Box 1304
 Junction City, Kansas 66441
 www.kveng.com



Tel: 785-762-5040
 Fax: 785-762-7744
 E-mail: JC@kveng.com

KAW VALLEY ENGINEERING, INC.

FT. RILEY BORING LOCATIONS
 DATUM = UTM Zone 14, NAD83 US SURVEY FEET
 NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
6	DP01	14208376.505	2287408.367	1048.756
6	DP02	14208381.456	2287504.721	1047.943
6	DP03	14208431.877	2287593.007	1047.543
6	DP04	14207730.390	2287660.026	1048.259
6	S01	14207686.994	2287565.951	1049.288
6	S02	14207599.816	2287596.384	1045.594
6	S03	14207505.263	2287614.691	1044.987
6	S04	14207418.418	2287653.955	1044.954
6	S05	14207365.259	2287690.683	1044.762
8	S01	14193629.305	2272150.873	1080.205
10	DP01	14206804.229	2281176.617	1066.719
15	DP01	14205319.511	2287608.715	1047.200
15	DP02	14205364.243	2287700.360	1047.236
15	DP03	14205558.968	2287634.359	1047.847
47	DP01	14193817.289	2272262.635	1067.713
47	DP02	14193868.099	2272281.361	1069.249
47	DP03	14193871.592	2272338.808	1077.090
47	DP04	14193797.142	2272320.512	1072.063
47	DP05	14193766.053	2272363.992	1074.293
47	S01	14193843.424	2272331.183	1077.672
47	S02	14193819.956	2272350.436	1076.708
47	S03	14193817.656	2272372.372	1076.971
47	S04	14193790.460	2272373.007	1077.930
48	DP01	14207157.512	2262364.171	1333.163
48	DP02	14205816.147	2263972.003	1326.366
48	DP03	14201262.083	2273586.383	1121.195

other locations

1333 N.E. Barry Road Kansas City, Missouri 64155 Tel: 816-468-5858 KC@kveng.com
 14700 W. 114th Terrace Lenexa, Kansas 66215 Tel: 913-894-5150 LX@kveng.com

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
50	S01	14194972.082	2256880.541	1070.159
50	S02	14194972.194	2256894.831	1070.426
50	S03	14194909.461	2256887.285	1069.471
50	S04	14194845.744	2256876.687	1071.476
50	S05	14194845.058	2256889.514	1071.411
50	S06	14195884.658	2258697.805	1080.352
50	S07	14195899.161	2258754.334	1079.695
50	S08	14195858.878	2258743.954	1080.669
50	S09	14195845.745	2258707.515	1080.657
50	S10	14195859.104	2258762.227	1080.302
50	S11	14193016.267	2267148.094	1087.008
50	S12	14192990.158	2267155.300	1086.062
50	S13	14193011.334	2267170.828	1086.555
50	S14	14193031.671	2267194.800	1087.602
50	S15	14193012.606	2267199.358	1086.575
50	S16	14199319.381	2273499.470	1100.237
50	S17	14199263.933	2273456.322	1100.560
50	S18	14199273.482	2273500.342	1099.653
50	S19	14199284.574	2273547.441	1099.082
50	S20	14199226.725	2273503.483	1099.098
50	S21	14207488.067	2280715.017	1071.344
50	S22	14207480.783	2280736.466	1071.466
50	S23	14207460.263	2280721.092	1070.942
50	S24	14207448.579	2280703.024	1070.683
50	S25	14207437.541	2280733.590	1070.171
20	DP01	14214435.121	2259673.953	1289.758
20	DP02	14214899.952	2259897.904	1295.065
20	DP03	14215453.812	2260175.200	1286.147
20	DP04	14215864.913	2260406.977	1272.983
20	DP05	14216206.838	2260726.902	1264.191
20	DP06	14216576.333	2260933.624	1256.688
20	DP07	14216480.082	2261304.192	1255.386
20	DP08	14216209.447	2261549.040	1255.435
20	DP09	14215776.275	2261262.854	1272.968
20	DP10	14215432.162	2261043.910	1275.827
20	DP11	14215106.193	2260841.222	1279.396
20	DP12	14214803.951	2260494.335	1279.345
20	DP13	14209618.231	2257473.237	1290.823
20	DP14	14209578.681	2257572.693	1291.510
20	DP15	14209531.301	2257473.316	1300.655
20	DP16	14209520.260	2257529.561	1289.617
20	DP17	14213651.062	2264920.772	1273.824
20	DP18	14213461.114	2265021.220	1273.685
20	DP19	14213680.216	2264993.297	1274.487
20	DP20	14213499.353	2265107.146	1277.704

FT. RILEY BORING LOCATIONS
 DATUM = UTM Zone 14, NAD83 US SURVEY FEET
 NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
22	DP01	14205206.575	2288136.306	1047.985
22	DP02	14204940.978	2288125.389	1048.827
22	DP03	14204832.227	2288405.146	1050.720
22	DP04	14204797.820	2288635.093	1046.938
22	DP05	14204986.546	2288823.601	1047.631
23	DP01	14208798.885	2266065.662	1275.268
23	DP02	14208764.370	2266162.061	1256.806
23	DP03	14208634.392	2266238.525	1259.403
23	DP04	14208560.847	2266138.269	1260.795
24	DP01	14193208.646	2258653.500	1072.482
24	DP02	14193358.947	2258825.277	1065.425
24	DP03	14193168.978	2258748.216	1064.545
24	DP04	14193252.025	2258841.294	1065.308
25	DP01	14194833.090	2273889.635	1058.048
25	DP02	14194915.370	2274079.787	1057.389
25	DP03	14194802.933	2274026.533	1057.754
25	DP04	14194665.039	2274017.322	1058.282
25	DP05	14194666.723	2273892.057	1058.286
26	DP01	14276373.567	2226137.084	1280.764
26	DP02	14275965.236	2226137.645	1285.592
26	DP03	14276482.952	2226546.154	1301.016
26	DP04	14275913.896	2226527.359	1303.105
13	DP01	14200416.246	2271150.251	1254.247
13	DP02	14200391.107	2271206.536	1255.964
13	DP03	14200364.935	2271111.676	1256.444
13	DP04	14200333.216	2271187.297	1256.555
39	DP01	14210872.411	2265406.896	1288.890
39	DP02	14211235.762	2265529.682	1281.037
39	DP03	14211344.589	2265857.569	1278.483
39	DP04	14210964.763	2265997.712	1288.688
39	DP05	14210553.565	2266058.667	1292.252
39	DP06	14210076.879	2266251.831	1290.152
39	DP07	14209911.317	2266018.310	1289.237
39	DP08	14209792.091	2265653.887	1288.902
40	DP01	14207103.516	2280239.619	1067.882
40	DP02	14207039.677	2280253.396	1068.880
40	DP03	14206998.143	2280224.720	1068.496
40	DP04	14207037.717	2280187.602	1067.570

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
41	DP01	14193241.008	2272346.837	1061.614
41	DP02	14193171.830	2272374.887	1060.710
41	DP03	14193080.468	2272250.149	1060.735
41	DP04	14206674.963	2285007.242	1052.031
41	DP05	14206616.269	2284955.970	1052.388
41	DP06	14206539.675	2284986.653	1052.609
41	DP07	14206310.229	2285089.663	1051.466
41	DP08	14206225.251	2285167.864	1050.837
41	DP09	14206349.896	2285201.869	1051.959
45	DP01	14192378.953	2269278.723	1125.500
45	DP02	14192359.330	2269370.160	1126.962
45	DP03	14192218.839	2269250.236	1123.491
45	DP04	14192208.121	2269346.907	1125.319
51	DP01	14190188.194	2274396.879	1061.150
51	DP02	14190191.496	2274360.534	1061.375
52	DP01	14201651.123	2273085.716	1181.923
52	DP02	14201891.640	2272215.134	1184.110
52	DP03	14201566.984	2272327.857	1171.548
52	S01	14201818.662	2273439.937	1142.787
52	S02	14201624.341	2273426.000	1139.820
52	S03	14201549.059	2273480.738	1130.635
5	S01	14206305.913	2257792.766	1293.040
14	S01	14199239.550	2272787.321	1123.614
14	S02	14199238.430	2272772.051	1124.821
14	S03	14199250.928	2272772.521	1124.826
36	DP01	14204558.334	2288817.482	1050.761
36	DP02	14204350.562	2289382.088	1047.908
36	DP03	14204728.536	2289638.780	1046.514
37	SB01	14200373.276	2274885.084	1075.807
37	SB02	14200336.726	2274952.453	1075.382

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
43	DP01	14192927.314	2257709.516	1068.491
43	DP02	14192921.518	2257792.787	1067.624
43	DP03	14192840.041	2257702.623	1069.184
43	DP04	14192822.943	2257784.472	1068.806
43	DP05	14192266.464	2258201.278	1067.532
43	DP06	14192263.336	2258269.872	1067.819
43	DP07	14192171.355	2258192.295	1067.471
43	DP08	14192158.279	2258265.081	1067.651
43	DP09	14199314.126	2273505.435	1099.991
43	DP10	14199284.241	2273543.303	1099.155
43	DP11	14199266.910	2273467.907	1100.294
43	DP12	14199235.324	2273504.847	1099.038
43	DP13	14202641.783	2276307.306	1069.826
43	DP14	14202713.995	2276405.927	1068.879
43	DP15	14202555.759	2276354.527	1067.861
43	DP16	14202626.759	2276468.487	1066.940
57	DP01	14202940.341	2261091.911	1265.152
57	DP02	14202922.358	2261021.712	1262.338