

# **TABLE OF CONTENTS**

# Page No.

LIST (	OF TAB	LES	TC-2	
LIST OF FIGURES TC-3				
LIST (	OF ACR	ONYMS AND ABBREVIATIONS	TC-4	
1.0	INTRO	DDUCTION	1-1	
	1.1	Purpose of the Expanded Site Inspection (ESI) Report	1-1	
	1.2	Site Description	1-3	
	1.3	Regulatory History	1-3	
	1.4	Rationale and Technical Approach	1-4	
	1.5	Risk-Based Screening Criteria	1-5	
	1.6	ESI Report Organization	1-6	
2.0	INDU	STRIAL WASTEWATER SYSTEM CUSTER HILL (FTRI-020)	2-1	
	2.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	2-1	
	2.2	Site Background and Previous Sampling Results	2-2	
	2.3	ESI Field Activities and Analytical Results	2-7	
	2.4	Discussion and Recommendations	2-11	
3.0	CAMP FUNSTON WASTEWATER TREATMENT PLANT (WWTP)			
	SLUD	GE DRYING BEDS (FTRI-022)	3-1	
	3.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	3-1	
	3.2	Site Background and Previous Sampling Results	3-1	
	3.3	ESI Field Activities and Analytical Results	3-2	
	3.4	Discussion and Recommendations	3-3	
4.0	CUST	ER HILL WWTP SLUDGE DRYING BEDS (FTRI-023)	4-1	
	4.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	4-1	
	4.2	Site Background and Previous Sampling Results	4-1	
	4.3	ESI Field Activities and Analytical Results	4-2	
	4.4	Discussion and Recommendations	4-3	
5.0		P FORSYTH WWTP SLUDGE DRYING BEDS (FTRI-024)	5-1	
	5.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	5-1	
	5.2	Site Background and Previous Sampling Results	5-1	
	5.3	ESI Field Activities and Analytical Results	5-2	
	5.4	Discussion and Recommendations	5-3	
6.0	MAIN POST WWTP SLUDGE DRYING BEDS (FTRI-025)		6-1	
	6.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	6-1	
	6.2	Site Background and Previous Sampling Results	6-1	
	6.3	ESI Field Activities and Analytical Results	6-2	
	6.4	Discussion and Recommendations	6-4	



# **TABLE OF CONTENTS (continued)**

#### Page No.

7.0	RAN	GE COMPLEX WASTEWATER LAGOONS (FTRI-026)	7-1
	7.1	Site Location, Land Use, Potential Migration Pathways, and Receptors	7-1
	7.2	Site Background and Previous Sampling Results	7-1
	.7.3	ESI Field Activities and Analytical Results	7-2
	7.4	Discussion and Recommendations	7-3

8.0	REFERENCES		8-1
-----	------------	--	-----

#### **APPENDICES**

B Survey Data

# LIST OF TABLES

# Table No. \_\_\_\_\_\_ Title

- 2-1 Pond Water Detections Wash Rack Reservoir (FTRI-020)
- 2-2 Pond Sediment Detections Wash Rack Reservoir (FTRI-020)
- 2-3 Groundwater Detections Wash Rack Reservoir (FTRI-020)
- 2-4 Stream Water Detections North and East of the Cell Complex (FTRI-020)
- 2-5 Stream Sediment Detections North and East of the Cell Complex (FTRI-020)
- 2-6 Soil Detections Industrial Wastewater System (FTRI-020)
- 2-7 Groundwater Detections Industrial Wastewater System (FTRI-020)
- 3-1 Soil Detections Camp Funston WWTP (FTRI-022)
- 3-2 Groundwater Detections Camp Funston WWTP (FTRI-022)
- 4-1 Soil Detections Custer Hill WWTP (FTRI-023)

#### 5-1 Soil Detections Camp Forsyth WWTP (FTRI-024)

- 5-2 Groundwater Detections Camp Forsyth WWTP (FTRI-024)
- 6-1 Soil Detections Main Post WWTP (FTRI-025)
- 6-2 Groundwater Detections Main Post WWTP (FTRI-025)
- 7-1 Soil Detections Range Complex Wastewater Lagoons (FTRI-026)

# LIST OF FIGURES

<u>Figure No.</u>	 Title	

- 1-1 ESI Field Sites, Fort Riley, Kansas
- 2-1 FTRI-020 Industrial Wastewater System North Wastewater Retention Ponds
- 2-2 FTRI-020 Industrial Wastewater System West Wastewater Retention Pond
- 2-3 FTRI-020 Industrial Wastewater System East Wastewater Retention Pond
- 2-4 FTRI-020 Sampling Locations at Old Wash Rack Reservoir and Cells 1 through 4
- 2-5 FTRI-020 ESI Soil Detections Industrial Wastewater System North Wastewater Retention Ponds
- 2-6 FTRI-020 ESI Soil Detections Industrial Wastewater System West Wastewater Retention Pond
- 2-7 FTRI-020 ESI Soil Detections Industrial Wastewater System East Wastewater Retention Pond
- 2-8 FTRI-020 ESI Groundwater Detections Industrial Wastewater System North Wastewater Retention Ponds
- 3-1 FTRI-022 Camp Funston WWTP Sludge Drying Beds
- 3-2 FTRI-022 ESI Soil Detections Camp Funston WWTP Sludge Drying Beds
- 4-1 FTRI-023 Custer Hill WWTP Sludge Drying Beds
- 4-2 FTRI-023 ESI Soil Detections Custer Hill WWTP Sludge Drying Beds
- 5-1 FTRI-024 Camp Forsyth WWTP Sludge Drying Beds
- 5-2 FTRI-024 ESI Soil Detections Camp Forsyth WWTP Sludge Drying Beds
- 6-1 FTRI-025 Main Post WWTP Sludge Drying Beds
- 6-2 FTRI-025 ESI Soil Detections Main Post WWTP Sludge Drying Beds
- 6-3 FTRI-025 ESI Groundwater Detections Main Post WWTP Sludge Drying Beds
- 7-1 FTRI-026 Range Complex Wastewater Lagoons
- 7-2 FTRI-026 ESI Soil Detections Range Complex Wastewater Lagoons

# LIST OF ACRONYMS AND ABBREVIATIONS

AEHA	Army Environmental Hygiene Agency
bgs	below ground surface
BMcD	Burns & McDonnell Engineering Company, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DA	United States Department of the Army
DAF	Dilution Attenuation Factor
DRO	Diesel Range Organics
ECC	Environmental Chemical Corporation
ESI	Expanded Site Investigation
FFA	Federal Facility Agreement
FID	Flame Ionization Detector
ft	feet
gal/day	gallons per day
GRO	Gasoline Range Organics
HRS	Hazard Ranking System
IRP	Installation Restoration Program
IWSA	Installation-Wide Site Assessment for Fort Riley, Kansas
J	Estimated
KAL	Kansas Action Level
KDHE	Kansas Department of Health and Environment
LBA	Louis Berger and Associates
MAAF	Marshall Army Airfield
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
mg/L	milligrams per liter
MP	Malcolm Pirnie, Inc.
MPRC	Multipurpose Range Complex
NCP	National Contingency Plan
NPL	National Priorities List

# LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PA	Preliminary Assessment
PAOC	Potential Areas of Concern
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oil, and Lubricants
ppb	parts per billion
PRG	Preliminary Remedial Goal
PWE	Fort Riley Directorate of Public Works - Environmental Division
QCSR	Quality Control Summary Report
RCRA	Resource Conservation and Recovery Act
RSK	Risk-Based Standards for Kansas
SI	Site Investigation
SSL	Soil Screening Level
SVOC	Semivolatile Organic Compound
TES	Tactical Equipment Shops
TPH	Total Petroleum Hydrocarbons
µg /kg	micrograms per kilogram
µg/L	micrograms per liter
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

\* \* \* \* \*

## 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 proposed additional sampling is also presented, if applicable.

This ESI Report presents the field results and recommendations for the following Wastewater Sites (Figure 1-1):

- Industrial Wastewater System Custer Hill (FTRI-020)
- Camp Funston Wastewater Treatment Plant (WWTP) Sludge Drying Beds (FTRI-022)
- Custer Hill WWTP Sludge Drying Beds (FTRI-023)
- Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)
- Main Post WWTP Sludge Drying Beds (FTRI-025)
- Range Complex Wastewater Lagoons (FTRI-026)

#### Introduction

This report includes a complete summary of all previous investigative work conducted at each of the Wastewater Sites, as well as the results of field work completed as part of the ESI. The evaluation includes an 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 Wastewater 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, 2003)

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 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 work plan 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 (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 residential Region 9 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) or action levels were applied.

1-5

- 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 7) 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 are 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 drove 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 was made. If closed status was not indicated, then a recommendation for additional work was made.

This ESI Report, which addresses only the Wastewater Sites, is organized as follows:

- Section 1.0 Introduction
- Section 2.0 Industrial Wastewater System Custer Hill (FTRI-020)
- Section 3.0 Camp Funston WWTP Sludge Drying Beds (FTRI-022)
- Section 4.0 Custer Hill WWTP Sludge Drying Beds (FTRI-023)
- Section 5.0 Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)
- Section 6.0 Main Post WWTP Sludge Drying Beds (FTRI-025)
- Section 7.0 Range Complex Wastewater Lagoons (FTRI-026)
- Section 8.0 References

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

# 2.0 INDUSTRIAL WASTEWATER SYSTEM CUSTER HILL (FTRI-020)

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

For the purposes of this ESI, the Custer Hill Industrial Wastewater System (FTRI-020) consists of the following elements:

- The North Wastewater Retention Ponds. These are located at the north side of the Custer Hill Cantonment area (Figures 1-1 and 2-1). This area includes the Central Vehicle Washing Facility.
- The West Wastewater Retention Pond. This pond is located just west of Kitty Drive and south of the Building 8390 Tactical Equipment Shop (TES) Compound (Figures 1-1 and 2-2).
- The East Wastewater Retention Pond. This pond is located just west of the intersection of First Division Road and Wells Street on Custer Hill (Figures 1-1 and 2-3).

These ponds have been or are elements of an integrated system designed to manage wastewater collected throughout Custer Hill. The East and West Ponds were replaced and subsequently taken out of service in 1997. The North Wastewater Retention Ponds are still in use. The primary source of water for these ponds is storm water runoff.

The North Wastewater Retention Ponds consist of five individual ponds (including cells 1-4 and the wash rack reservoir), with a combined surface area of approximately 32 acres and a storage capacity of 75 million gallons (Figure 2-1). The surface elevation of the ponds drops from south to north, since the direction of the natural drainage is also to the north. These ponds are located in the upland area of Fort Riley, and are underlain by bedrock (interbedded limestone and shale), with a thin layer of unconsolidated material. This unconsolidated material consists of residual soil and possibly loess. The actual depth to bedrock in the vicinity of the North Wastewater Retention Ponds is approximately 9 to 31 feet (ft) below ground surface (bgs). Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local drainage, groundwater would be expected to flow towards the north. The area around these ponds is open, with few structures. The land cover is either mowed grass or wooded.

The West Wastewater Retention Pond is approximately 100 ft in diameter (Figure 2-2). The pond is surrounded by a chain-link fence and the area is covered with mowed grass. As mentioned previously,

this pond has been replaced and is no longer in use. The subsurface geology is similar to that as described for the North Wastewater Retention Ponds (above). The natural drainage in this area is to the west, towards Fourmile Creek and the Republican River.

The East Wastewater Retention Pond is approximately 65 ft by 225 ft in size (Figure 2-3). The pond is surrounded by a chain-link fence and the area is covered with mowed grass. As mentioned previously, this pond has been replaced and is no longer in use. The subsurface geology is similar to that as described for the North Wastewater Retention Ponds (above). The natural drainage is to the east, towards Forsyth Creek and the Kansas River.

No protected or special ecological or cultural features were observed or are known to occur at or near any of these ponds.

No water supply wells are located on Custer Hill. The well field for Fort Riley is located approximately three miles south of Custer Hill, in the floodplain of the Republican River.

## 2.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

#### Central Vehicle Wash Facility at the North Wastewater Retention Ponds

The new facility began operation around 1986. Prior to the construction of this central facility, vehicles were washed at the TESs. Wash racks at these shops were drained to one of the wastewater retention ponds feeding the central vehicle washing facility. At the new facility, the vehicles pass through a wash/dip area, and water cannons are used to direct high pressure water at the vehicles. Soap and detergents are sometimes used. Engine compartments are also cleaned. After the wash, the vehicles proceed to the adjacent rinse (post-wash) area where rinse water is used to remove the remaining dirt. Water from the wash area drains into a double sedimentation/oil-grit skimmer basin (Building 8555) (Figure 2-4). The skimmer removes floating oils, which are managed as waste oils. The water passes over to a retention pond (cell 1) (Figure 2-1). Similarly, the water from the rinse facility goes to a sedimentation pool (no skimmer) and then joins the water from the wash sedimentation pools before entering cell 1.

The waste oil is managed by Safety Kleen, who tests the waste oil prior to putting the oil in their truck to document that the waste oil is recyclable. If the waste oil fails the testing, it is shipped off-site as hazardous or special waste based on the toxicity characteristic leaching procedure (TCLP).

From 1985 to 1997, sediment was placed at a sediment disposal site west of the Central Vehicle Washing Facility system. Three 75 by 215 ft bermed retention cells were constructed at the disposal site in 1997. Each cell holds 577 cubic yards of sediment at a depth of one ft or 1,153 cubic yards of sediment at a depth of two ft. One of the sediment retention cells has a geotextile liner and is now in use to manage contaminated sediment removed from the closed East and West earthen sedimentation ponds. The management of those sediments is conducted in the same manner as the other sediments in the retention cells. KDHE required that samples be taken from the sides and bottoms of the retention cells after their construction. Composite samples from the three cells indicate that TPH levels in the bottoms were 130 mg/kg, while TPH levels in the berms were 50 mg/kg.

The sediment from the Central Vehicle Wash Facility grit chamber and sedimentation basins involves transporting the sediment, on an alternating basis, to one of the three bermed, earthen sediment retention cells located approximately one-half mile north of the sedimentation basins. The sediment management protocol is presented in Fort Riley's "Sediment Management Procedure for the Central Vehicle Wash Facility & Tactical Equipment Shop (TES) Sedimentation Basins." After placement in one of the earthen retention cells, the POL contaminated sediment is tilled on a quarterly basis to enhance TPH degradation. If TPH levels have decreased to an acceptable level determined by analytical results, the sediment is removed for use in land reclamation projects or as cover at a Fort Riley landfill. Sediments are held in the retention cells for a minimum of one year. If sampling indicates that allowable limits may not be reached within the managed time frame, other methods may be used to increase degradation rates.

Cell 1 is several acres and supports vegetation typical of wetlands, with cattails and abundant wildlife. Water from cell 1 flows over to a lower pond (cell 3) and then on to a still lower pond (cell 4). There is a precautionary oil boom where water enters cell 3 and cell 4. These ponds are not lined. Water from cell 4 is pumped back to the wash facility for reuse. Water pumped from cell 4 is split near the top of the hill with some going to the water cannon at the wash facility and some going to a wet well from which it is pumped to the rinse (post-wash) facility. In extremely rainy weather, water from cell 4 is released into the head waters of Threemile Creek. The system is largely self-contained. The facility is designed to prevent surface runoff from entering the systems. However, additions and subtractions from the system result from precipitation and evaporation.

The principal purpose of the central wash facility is to remove dirt and grime from vehicles as part of routine maintenance. The dirt picked up by the vehicles during use does not contain CERCLA or RCRA hazardous substances. However, there are numerous POLs associated with vehicle use and maintenance. Some of these POLs are removed from the vehicles during washing and enter the wash water collection

system. The contaminants of concern at the site are primarily petroleum hydrocarbons. Grab samples of water from the facility were collected by the KDHE in 1990 and 1991 and analyzed for VOCs and other parameters. The results indicated that petroleum hydrocarbons were present with total VOCs ranging from a high of approximately 350 parts per billion (ppb) to less than 20 ppb (LBA, 1993).

A Site Investigation (SI) was conducted in May 1993 at the Old Wash Rack Reservoir / Cells 1 through 4 to determine whether hazardous wastes were released to the ponds and in turn whether the ponds were releasing hazardous wastes to the surface and subsurface environments. No evidence of a hazardous waste release was found. The following sampling activities were conducted during the SI at the Old Wash Rack Reservoir / Cells 1 through 4.

- Thirty soil gas samples were collected around the perimeter of the ponds,
- Two water samples and three sediment samples were collected from each of the five ponds,
- Three monitoring wells were installed and groundwater samples were collected, and
- Three surface water samples and six sediment samples were collected from the two primary intermittent streams that flow along the eastern and western sides of the ponds and join into a common intermittent stream north of Cell 4.

Sample locations are presented on Figure 2-4. The soil gas samples were analyzed for VOCs using a flame ionization detector (FID). Of the 30 soil gas sampling locations, only three samples had positive detections. Specifically, toluene was detected at 1.6 micrograms per liter ( $\mu g/L$ ) and 1.1  $\mu g/L$  in the 12-ft bgs soil gas samples at locations WR-FO and WR-H2, respectively. There was also a Total FID detection of 12  $\mu g/L$  at location WR-C2. All three of these detections were just above the detection limits of 1.0  $\mu g/L$  for toluene and 10  $\mu g/L$  for Total FID. They were also below the action levels and were not investigated further (LBA, 1994).

Water and sediment samples from the ponds were analyzed for VOCs, semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) (gasoline range organics [GRO] and diesel range organics [DRO]), and priority pollutant metals. The positive surface water and sediment detections from the ponds are presented on Tables 2-1 and 2-2, respectively. Results from the analysis of surface water samples collected from the Old Wash Rack Reservoir / Cells 1 through 4 indicate the presence of TPH-DRO, bis(2-ethylhexyl)phthalate in one sample, lead in one sample, and silver in two samples. These detections were below the Kansas Action Levels (KALs) and MCLs. Organic compounds detected in the sediment

samples include TPH-DRO, TPH-GRO, methylene chloride, toluene, bis(2-ethylhexyl)phthalate, xylene, and di-n-butylphthalate. The diesel fraction was detected with greater frequency and at higher concentrations than the gasoline fraction and was present in all but one of the samples. Several metals, including arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc, were detected in the sediment samples, but none exceeded the risk-based concentrations for soils (LBA, 1994).

Monitoring Wells WR-93-01, WR-93-02, and WP-93-03 were installed at the Old Wash Rack Reservoir. One analyte was detected in the groundwater and is shown on Table 2-3. Groundwater samples were analyzed for VOCs, SVOCs, TPH-GRO, TPH-DRO, and priority pollutant metals. With the exception of an arsenic detection of 0.02 milligrams per liter (mg/L) in Monitoring Well WR-93-01, analytes exhibited chemical concentration values below levels of detection (LBA, 1994).

Detected analytes in the surface water and stream sediment samples are shown in Tables 2-4 and 2-5, respectively. Water and sediment samples from the streams were analyzed for VOCs, SVOCs, TPH-DRO, TPH-GRO, and priority pollutant metals. The only detections in the surface water were lead and zinc, which were detected at CVWF-CH-Stream AQ-5. In the sediments, TPH-DRO was detected at concentrations of 1,100 micrograms per kilogram ( $\mu g/kg$ ) and 38  $\mu g/kg$  at CVWF-CH-Stream Sed 1 and CVWF-CH-Stream Sed 5, respectively. No other organic compounds were detected. Arsenic, beryllium, cadmium, copper, lead, nickel, and zinc were detected, but not above the risk-based guidelines for soils (LBA, 1994).

There are no CERCLA or RCRA hazardous substances associated with the central vehicle wash facility.

#### East and West Wastewater Retention Ponds

As previously mentioned, some vehicle washing was performed at the TES on Custer Hill. Water from these facilities was diverted to one of two wastewater retention ponds on the east and west of Custer Hill or was pumped to the reservoir directly.

The East Wastewater Retention Pond was built around 1988 and was rectangular (approximately 225 ft by 65 ft) and surrounded by an eight-ft high chain link fence. The inlet pipe was at the northwest end and was surrounded by several floating booms where oil was collected and skimmed while in operation. The waste oil was placed in tanks and managed as waste oil. The outfall was on the west side of the pond. Water was pumped to the Old Wash Rack Reservoir. The pond received water with associated waste oil from nine TESs, including water from vehicle washing activities conducted at the motor pools on the eastern portions of Custer Hill. As with the central vehicle wash facility, the contaminants associated

with washing at the TES were petroleum hydrocarbons. However, this pond also received water from drains at Building 8100, which used a variety of chemicals and cleaners. Residues from activities at this building had the potential to enter the drain system leading to the East Pond. In addition, water from the industrial sumps at the building was pumped to the East Pond. The solid residue in these sumps was stored and disposed as a hazardous waste, indicating that lesser amounts of the hazardous components were potentially present in the water. Therefore, the East Pond had the potential to receive wastewater contaminated with hazardous substances and discharge these substances to the reservoir and cell 2. The amount of CERCLA hazardous substances potentially received by this facility is unknown, but would be expected to be in low concentrations since there were no direct discharges of hazardous waste to the pond; rather, it received residuals via floor drains. In contrast, the pond received substantial quantities of petroleum hydrocarbons. Building 8100 was disconnected from the pond system in 1994. The East Pond had the potential to release contaminants to groundwater because there are no impermeable liners installed at the site to prevent infiltration of materials to groundwater.

The West Wastewater Retention Pond was located several hundred ft west of Track Vehicle Road. This pond was built around 1980 and entered into use around 1982. It was round with an approximate diameter of 100 ft and was enclosed by an eight-ft high chain link fence. Two inlet pipes were located on the north and east sides of the pond, with a single outlet on the south side which drained to the Old Wash Rack Reservoir. The operation of this pond was similar to the East Pond in that it received wash water collected from buildings on western Custer Hill. The predominant operations on the western part of Custer Hill are the TES, where the predominant wastes generated are petroleum. Oil booms were present on the pond during the 1994 SI conducted by LBA; however, staining was observed on the banks of the pond and oil was observed near the outlet. During a site visit in 1997, it was observed that the inlet on the north side of the West Pond was plugged with concrete. Floating oil has been reported on the pond. There are no CERCLA or RCRA hazardous substances associated with the west wastewater retention pond.

A SI was conducted in May 1993 at the East and West Ponds to determine whether hazardous wastes were released to the ponds and in turn whether the ponds were releasing hazardous wastes to the surface and subsurface environments. No evidence of a hazardous waste release was found.

In 1997, an investigation was conducted to determine which field activities were necessary to close the East and West Ponds (BMcD, 1998). The following activities were conducted as part of the closure evaluation:

- Soil samples were collected from beneath the sediment at each pond for chemical analysis;
- Soil samples were collected from the sidewalls of each pond for chemical analysis; and
- Sediment samples were collected from within the ponds and at the inlets and outlets of each pond for chemical analysis.

VOCs detected in soil and sediment samples included benzene, toluene, ethylbenzene, and xylene. SVOCs detected in soil and sediment samples included bis-2-ethylhexylphthalate, phenanthrene, naphthalene, and 2-methylnaphthalene. TPH (both diesel and motor oil) was detected in the soil and sediment samples. Metals detected included arsenic, barium, cadmium, chromium, lead, and mercury. In general, the levels of contaminants encountered were lower than those encountered during the 1993 SI (LBA, 1994 and BMcD, 1998).

In May 1999, both the East and West Wastewater Retention Ponds were dewatered, and the sediments were removed and disposed off the site by the Environmental Chemical Corporation ([ECC], 1999).

Groundwater was not encountered at the West Wastewater Retention Pond during the 2000 field activities. The direct-push boring log for the West Wastewater Retention Pond indicated refusal at 17.8 ft bgs. A total of 65 soil samples were collected from the pond excavation walls and subsurface at the East and West Wastewater Retention Ponds and analyzed. Borings were not advanced at the East Wastewater Retention Pond

# 2.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Custer Hill Industrial Wastewater System as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 13, 14, 17, and 18, 2006. Groundwater samples were collected on July 17, 18, and 25, 2006.

Twelve direct-push borings (DP01 through DP12) were advanced around the perimeter of the North Wastewater Retention Ponds (Figure 2-1). Four direct-push borings (DP013 through DP16) were advanced around the perimeter of the West Wastewater Retention Pond (Figure 2-2). Four direct-push borings (DP017 through DP20) were advanced around the perimeter of the East Wastewater Retention Pond (Figure 2-3). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore<sup>™</sup> sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in

Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected, where possible, and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered). Only Direct-Push Borings DP05, DP07, DP09, DP-10, DP-11, and DP12 from the North Wastewater Retention Ponds contained sufficient water for sampling. All of the borings from the West and East Wastewater Retention Ponds were dry. No soil samples were collected below a depth of 12 ft bgs. All planned subsurface soil samples were collected at the North Wastewater Retention Pond. However, the 8- to12-ft samples in locations DP17 through DP20 and the 4- to 8-ft sample at location DP20 could not be collected due to refusal at the East Wastewater Retention Pond.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data are included in Appendix B.

Subsurface soil analytical results (positive detections only) for the Wastewater Retention Ponds are presented in Table 2-6. Soil results for each of the three wastewater retention ponds are summarized below:

North Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, lead, and selenium were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 milligrams per kilogram (mg/kg) and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-push boring locations and in 39 out of 40 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.4 mg/kg (DP02; 9 to 10 ft bgs) to 33 mg/kg (DP04; 7 to 8 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-push boring locations and in 37 out of 40 of the soil samples collected at various depths from those borings, with concentrations ranging from 3 mg/kg (DP07; 1 to 2 ft bgs) to 33 mg/kg (DP04; 7 to 8 ft bgs). Probe locations and detections are shown on Figure 2-5.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively. Exceedences of the residential KDHE RSK were only present in 2 (including one duplicate) of the 40 soil samples collected at the 2- to 8-ft depth.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 soil screening levels (SSLs) to evaluate the potential for the migration to groundwater using the DAF of 20. As a result, exceedences of the SSL DAF 20 of 29 mg/kg for arsenic were present in only one sample (DP04, 7 to 8 ft bgs) at a concentration of 32 mg/kg (33 mg/kg in the duplicate). In addition, an exceedence of the SSL DAF 20 of 38 mg/kg for chromium was present in only one sample (DP04, 7 to 8 ft bgs) at a concentration of 40 mg/kg (39 mg/kg in the duplicate). The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP04 (7 to 8 ft and 11 to 12 ft bgs), DP05 (1 to 2 ft bgs), DP06 (5 to 6 ft and 9 to 10 ft bgs), DP08 (8 to 9 ft bgs), DP09 (7 to 8 ft and 9 to 10 ft bgs), DP10 (7 to 8 ft bgs), at concentrations ranging from 6 mg/kg (DP09, 9 to 10 ft bgs), to 33 mg/kg (DP04, 7 to 8 ft bgs).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

West Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-push boring locations and in all 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.6 mg/kg (DP15; 7 to 8 ft bgs) to 41 mg/kg (DP13; 7 to 8 ft bgs). Probe locations and detections are shown on Figure 2-6.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively. Exceedences of the residential KDHE RSK were only present in one of the 13 soil samples collected from Boring DP13 at the 2- to 8-ft depth.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 SSLs to evaluate the potential for the migration to groundwater using the DAF of 20. As a result, exceedences of the SSL DAF 20 of 29 mg/kg for arsenic were present in only one

sample (DP13, 7 to 8 ft bgs) at a concentration of 41 mg/kg. In addition, an exceedence of the SSL DAF 20 of 38 mg/kg for chromium were present in Borings DP13 (7 to 8 ft bgs) and DP15 (7 to 8 ft and 10-11 ft bgs) at concentrations ranging from 40 mg/kg to 140 mg/kg. Data were also evaluated against the residential and non-residential KDHE RSKs. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP13 (7 to 8 ft and 11 to 12 ft bgs), DP14 (6 to 7 ft bgs), DP15 (1 to 2 ft bgs), and DP16 (1 to 2 ft and 10.5 to 11.5 bgs) at a concentrations ranging from 6 mg/kg (DP16, 10.5 to 11.5 ft bgs) to 41 mg/kg (DP13, 7 to 8 ft bgs).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

East Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-push boring locations and in all 8 of the soil samples collected at various depths from those borings, with concentrations ranging from 3.9 mg/kg (DP18; 0 to 2 ft bgs) to 5.8 mg/kg (DP20; 1 to 2 ft bgs). Probe locations and detections are shown on Figure 2-7.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively, but no exceedences were noted.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 SSLs to evaluate the potential for the migration to groundwater using the DAF of 20, but no exceedences were noted. The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway, but no exceedences were noted.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

Groundwater analytical results (positive detections only) for the Wastewater Retention Ponds are presented in Table 2-7. Groundwater samples were only collected from the North Retention Pond, and the results are summarized below:

North Retention Pond - Arsenic, barium, cadmium, chromium, lead, and mercury were detected in unfiltered groundwater samples taken from the direct-push borings at the Custer Hill Industrial Wastewater System. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only arsenic, barium, and lead were detected in filtered groundwater samples taken at this site. Only arsenic exceeded the USEPA Region 9 tap water PRGs in the filtered groundwater samples taken from Direct-Push Borings DP09 and DP12, which are both at the North Wastewater Retention Pond, in which arsenic was detected at concentrations of 0.016 and 0.022 mg/L, respectively (see Figure 2-8). Since no USEPA Region 9 tap water PRG exists for lead, the KDHE RSK of 0.015 mg/L was used as a screening tool. The KDHE RSK for lead was not exceeded in any groundwater sample collected from the Custer Hill Industrial Wastewater System.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

#### 2.4 DISCUSSION AND RECOMMENDATIONS

Because the East and West Wastewater Retention Ponds were dewatered, sampled, and sediments removed, no effort will be made to compare the ESI data to historical sampling data. Additionally, during the ESI, soil samples were collected from the perimeter of the Central Vehicle Wash Facility and the North Wastewater Retention Ponds, not from the sediments within the ponds; therefore comparison of the ESI data to the previous sample results for this area is not comparable. The East and West Wastewater Retention Ponds are currently located within the Maintenance portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future.

ESI sampling results are summarized as follows:

- Only arsenic and chromium were detected above screening criteria.
- Arsenic exceeded screening criteria in many of the subsurface soil samples. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

- Chromium only exceeded the SSL DAF 20 in three borings DP04 (7 to 8 ft bgs), DP13 (7 to 8 ft bgs), and DP15 (7 to 8 ft and 10 to 11 ft bgs). However, groundwater is not present in the unconsolidated material above bedrock across much of the Custer Hill area. The possibility of chromium leaching to groundwater appears to be minimal.
- Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples collected from the North Wastewater Retention Pond. 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.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, all three wastewater retention ponds are recommended for closed status.

## 3.0 CAMP FUNSTON WWTP SLUDGE DRYING BEDS (FTRI-022)

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

The Camp Funston WWTP was formerly located at the southeastern corner of Camp Funston, southeast of the intersections of L and Twelfth Streets (see Figures 1-1 and 3-1). The sludge drying beds were located at the southeast corner of the facility, approximately 1,800 ft from the Kansas River (LBA, 1993).

The Camp Funston WWTP site is located on the floodplain of the Kansas River; however, the location is protected by a levee. The 500-year floodplain does not extend beyond the levee (LBA, 1993). The site is generally flat and is presently covered by grass. The site is underlain by alluvial deposits. These deposits, which consist of clay, silt, and sand, have a thickness of approximately 50 to 60 ft, and overlie shale and limestone bedrock. Depth to groundwater is approximately 20 ft bgs. Groundwater flow is generally to the east, towards the Kansas River (United States Geological Survey [USGS], 2005).

The Kansas River alluvial aquifer is used as a source of drinking water by nearby communities. Fort Riley has no water supply wells located at Camp Funston. The nearest 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. There are no identifiable overland migration pathways from the site to the river.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

#### 3.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The Camp Funston WWTP was built circa 1940 and had a design capacity for one to three million gallons per day (gal/day) with one anaerobic sludge digester and three sludge drying beds. The facility stopped operation in 1974 and began pumping its sewage to the Main Post WWTP at that time. A new lift station was built during 1986-1987. The digester was cleaned out during 1985-1987 and the sludge was applied to the land locally. It is unknown whether this was immediately adjacent to the plant site. The plant was totally demolished during 1988-1989. The dried material from the sludge beds was typically disposed in post landfills (LBA, 1993).

No previous sampling has been performed at this site.

## 3.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Camp Funston WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 10, 2006. Groundwater samples were collected on July 10 and 11, 2006.

Five direct-push borings (DP01-DP05) were advanced around the perimeter of the former sludge drying bed location (Figure 3-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore<sup>™</sup> sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected, where possible, and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000); both filtered and unfiltered). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Camp Funston WWTP Sludge Drying Beds.

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

Direct-push soil analytical results (positive hits only) for the Camp Funston WWTP Sludge Drying Beds are presented in Table 3-1, and detections above screening criteria are presented in Figure 3-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in 14 out of 17 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.2 mg/kg (DP04; 9 to 12 ft bgs) to 8.1 mg/kg (DP03; 7 to 8 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-boring locations and in 11 out of 17 of the soil samples collected at various depths from those borings, by the concentrations of the direct-boring locations and in 11 out of 17 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.7 mg/kg (DP01; 7 to 8 ft bgs) to 8.1 mg/kg (DP03; 7 to 8 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the the gradient of the direct-boring locations and in 11 out of 17 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.7 mg/kg (DP01; 7 to 8 ft bgs) to 8.1 mg/kg (DP03; 7 to 8 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK for arsenic of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, a single soil sample did exceed the KDHE RSK soil to groundwater protection pathway of 5.84 mg/kg for arsenic. This sample had an arsenic concentration of 8.1 mg/kg (DP03; 10 to11 ft bgs).

Groundwater analytical results (positive hits only) for the Camp Funston WWTP Sludge Drying Beds are presented in Table 3-2. Arsenic, barium, cadmium, chromium, lead, and selenium were detected in unfiltered groundwater samples taken from the direct-push borings at the Camp Funston WWTP Sludge Drying Beds. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only barium and selenium were detected in filtered groundwater samples taken at this site, and concentrations detected were below the USEPA Region 9 tap water PRGs.

#### 3.4 DISCUSSION AND RECOMMENDATIONS

The Camp Funston WWTP Sludge Drying Beds are currently located within the Supply/Storage portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs.
   However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There were no detections of dissolved metals in groundwater which exceeded the USEPA Region 9 PRGs for tap water.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Camp Funston WWTP Sludge Drying Beds site is recommended for closed status.

\* \* \* \* \*

# 4.0 CUSTER HILL WWTP SLUDGE DRYING BEDS (FTRI-023)

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

The Custer Hill WWTP is located along the eastern portion of the Custer Hill cantonment complex (Figures 1-1 and 4-1). The plant is located off of 1st Division Road. The Custer Hill WWTP is a new facility, with much of the original plant having been demolished. However, the original sludge drying beds were retained and are still in use. These are located on the northwestern portion of the facility and occupy a total area of approximately 300 ft by 200 ft (Figure 4-1) (LBA, 1993).

The site is located in an upland area of Fort Riley, and is underlain by bedrock (interbedded limestone and shale), covered by unconsolidated material. This unconsolidated soil consists of residual soil and possibly loess. The depth to bedrock in the vicinity of Building 8100 at the consolidated maintenance facility is approximately 4 to 9 feet bgs. Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local topography, groundwater would be expected to flow to the east, towards the Forsyth Creek drainage. Cameron Spring is fed from springs derived from underlying limestone bedrock. The plant is located adjacent to Forsyth Creek, which is a perennial stream. Overland flow from the sludge drying area would enter this tributary. Forsyth Creek is a tributary to Threemile Creek, which discharges to the Kansas River approximately five miles downstream of the plant (LBA, 1993).

The Fort Riley well field is located approximately 2 ½ miles south-southwest of the Site, in the floodplain of the Republican River. The well field for the community of Ogden is located approximately 4 ½ miles east of the Site, in the floodplain of the Kansas River. The upland area does not support large capacity supply wells; therefore, there are no water supply wells located on Custer Hill.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

# 4.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The plant began operation in the 1950s concurrent with the building of facilities on Custer Hill and remains in active operation. There have been major improvements to the plant around 1960, 1967, 1976, 1987, and 2005. The facility was originally designed to treat 2 million gal/day with 5 anaerobic digesters, 3 trickling filters, 16 concrete sludge drying beds, and 1 sludge overflow lagoon. This permitted

discharge of effluent flows into a branch of Threemile Creek below the Cameron Springs ponds. The biggest routine problem noted for this treatment plant has been cooking grease from the many mess halls and homes on Custer Hill. In the 1988 to 1989 time frame, there was a heating oil leak from a storage tank near Building 6223. The oil infiltrated the sewer system and was pumped from the local pump station (Building SP620) to the Custer Hill plant. The oil (1,200 gallons) was collected in a primary tank and removed by a water oil recycler.

Following the recently-completed renovation of this plant, the Custer Hill WWTP has become the primary wastewater treatment facility for virtually the entire post.

Extensive geological investigations were performed during 2001 through 2003 for the design and construction of the current WWTP at the Site. The thickness of the overburden varies between 3 ft to 8 ft throughout the WWTP area including the area covered by the sludge beds. No groundwater was encountered within the overburden. Groundwater was encountered in the bedrock at about 27 ft bgs. There is no record of any other previous site investigations having been conducted at the Custer Hill WWTP, including the sludge drying beds.

#### 4.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil samples were collected at the Custer Hill WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 11, 2006. Groundwater samples were planned, but could not be collected due to refusal prior to reaching groundwater.

Three direct-push borings (DP01-DP03) were advanced northeast of the former sludge drying bed location and one direct-push boring (DP04) was advanced southeast of the former sludge drying bed location (Figure 4-1). These direct-push borings were continuously sampled from the ground surface to refusal using a 2-inch Macrocore<sup>™</sup> sampler. Three soil samples were to be collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. However, refusal was encountered prior to obtaining the 4- to 8-ft interval for Direct-Push Boring DP01 and the 8- to 12-ft interval for Direct-Push Boring DP02. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced in attempt to reach the water table, but refusal was obtained prior to reaching groundwater, so no groundwater samples were collected. No soil samples were collected below a depth of 12 ft bgs.

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

Direct-push soil analytical results (positive hits only) for the Custer Hill WWTP Sludge Drying Beds are presented in Table 4-1, and detections above screening criteria are presented in Figure 4-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-boring locations and in 8 out of 9 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.6 mg/kg (DP03, 0 to 1 ft bgs) to 7 mg/kg (DP04, 4 to 6.5 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, two soil samples did exceed the KDHE RSK soil to groundwater protection pathway of 5.84 mg/kg for arsenic. These samples had an arsenic concentration of 6.7 mg/kg (DP02, 1 to 2 ft bgs) and 7 mg/kg (DP04, 4 to 6.5 ft bgs).

## 4.4 DISCUSSION AND RECOMMENDATIONS

The Custer Hill WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Custer Hill WWTP Sludge Drying Beds site is recommended for closed status.

\* \* \* \* \*

## 5.0 CAMP FORSYTH WWTP SLUDGE DRYING BEDS (FTRI-024)

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

The former Camp Forsyth WWTP was located on the eastern edge of Camp Forsyth, occupying Building 2592 and adjacent areas (Figures 1-1 and 5-1). The site was on the floodplain of the Republican River, which lies about 1,200 ft east of the WWTP facility. The plant was located behind the levee of the Republican River, placing the Site on the 500-year floodplain. According to Fort Riley PWE personnel, the Camp Forsyth WWTP was demolished in 2005.

The site overlies alluvial deposits of the Republican River, which is the source of drinking water for Fort Riley and nearby communities. The well field for Fort Riley is located approximately 4,000 ft to the east-northeast of the Site. The depth to groundwater is approximately 17 to 19 ft bgs, with groundwater flow most likely to the east, towards the Republican River. Releases to the Republican River via overland transport of contaminants will be prevented by the levee, but releases may occur during flooding of the sludge drying area. The Republican River joins the Smoky Hill River to form the Kansas River a little over one mile below the Site (LBA, 1993).

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

## 5.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The plant received waste from Camp Forsyth, Colyer Manor, and on average, 30% of the waste from Custer Hill Family Housing. The plant began operations in about 1945, but was recently demolished in 2005. The average flow was about 450,000 gal/day in 1988, with peak flows of 700,000 gal/day occurring in the spring. This facility included an influent pump station, a primary clarifier, 2 trickling filters, 2 final clarifiers, a two-stage anaerobic digester, and 12 sludge drying beds. The permanent sludge drying beds were concrete, but temporary sludge drying beds have been used during times of repair. There were subdrains under the sludge beds that bring water back to the treatment plant. Sludge was disposed of in accordance with appropriate regulations. The outfall was about 1,000 ft east of the plant on the Republican River (LBA, 1993).

Wastes from Colyer Manor and Custer Hill Family Housing were not expected to contain RCRA or CERCLA hazardous substances. Although the sludge drying beds had subsurface drain returns to the

plant, earlier sludge drying practices did not employ such drains. Thus, the general area of the sludge drying beds was of potential concern due to past operations. The area of the sludge drying beds was south of the plant and occupied an area approximately 300 ft by 150 ft (LBA, 1993).

There was no record of any previous site investigations having been conducted at the Camp Forsyth WWTP, including the sludge drying beds.

## 5.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Camp Forsyth WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil and groundwater samples were collected on July 11, 2006.

Four direct-push borings (DP01-DP04) were advanced to the northeast, east, south, and southwest of the former sludge drying bed location (Figure 5-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore<sup>TM</sup> sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Camp Forsyth WWTP Sludge Drying Beds.

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

Direct-push soil analytical results (positive hits only) for the Camp Forsyth WWTP Sludge Drying Beds are presented in Table 5-1, and detections above screening criteria are presented in Figure 5-2. Arsenic, barium, cadmium, chromium, lead, and mercury were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in all 13 soil samples collected at various depths from those borings, with concentrations ranging from 1.1 mg/kg (DP03, 11 to 12 ft bgs) to 4.5 mg/kg (DP03, 0 to 1 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were

present in all of the direct-boring locations and in 11 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.7 mg/kg (DP02, 7 to 8 ft bgs) to 4.5 mg/kg (DP03, 0 to 1 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK of 11 mg/kg, and no exceedences were present.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

Groundwater analytical results (positive hits only) for the Camp Forsyth WWTP Sludge Drying Beds are presented in Table 5-2. Arsenic, barium, cadmium, chromium, and lead were detected in unfiltered groundwater samples taken from the direct-push borings at the Camp Forsyth WWTP Sludge Drying Beds. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only barium and selenium were detected in filtered groundwater samples taken at this site at concentrations below the USEPA Region 9 tap water PRGs.

## 5.4 DISCUSSION AND RECOMMENDATIONS

The Camp Forsyth WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There were no detections of dissolved metals in groundwater which exceeded the USEPA Region 9 PRGs for tap water.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on this data, the Camp Forsyth WWTP Sludge Drying Beds are recommended for closed status.

\* \* \* \* \*

# 6.0 MAIN POST WWTP SLUDGE DRYING BEDS (FTRI-025)

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

The Main Post WWTP was located on the eastern edge of the Main Post and occupied Buildings 390 through 393 and adjacent areas (Figures 1-1 and 6-1). The sludge drying beds are located approximately . 1,000 ft east of the plant on the floodplain of the Kansas River. The river is located approximately 600 ft east of the Site.

The sludge drying beds overlie alluvial deposits of the Kansas River. The Kansas River alluvial aquifer is used as a source of drinking water by nearby communities. The total thickness of alluvial sediments at this location is approximately 50 to 70 ft, and the depth to groundwater is approximately 21 to 23 ft bgs. The direction of groundwater flow is approximately to the east, towards the Kansas River. Overland flow from the site would enter the Kansas River directly. The sludge drying beds are located on the 100-year floodplain (LBA, 1993).

The nearest supply well is located at the west side of Marshall Army Airfield (MAAF), approximately 2 miles south of the Site. In addition, there are several private supply wells located on the opposite side of the Kansas River, to the east of the sludge drying beds. The closest supply well is approximately 2,000 ft east of the Site. All of these wells are on the other side of the Kansas River, which acts as a hydrologic boundary for the alluvial aquifer system.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

# 6.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The Main Post WWTP commenced operation in 1945 and received approximately 600,000 gal/day of wastewater from Main Post, MAAF, Camp Whitside, and Camp Funston. The MAAF waste included effluent from their industrial waste treatment plant (Building 721). According to current operations personnel, the MAAF plant has skimming and coagulation capabilities, but these are not used as the MAAF water is of suitable quality to go directly to the WWTP. The effluent from the Main Post plant was discharged to the Kansas River via an underground pipeline one-half mile to the south. The sludge drying beds have water drains that originally went to the outfall, but were later redesigned to pump back to the plant. Dried sludge was normally disposed in the landfills; although, some may have been buried

locally. The general area of the sludge drying beds and the area between the sludge drying beds and the plant were evaluated because of past practices (LBA, 1993). As of late 2005, the Main Post WWTP was no longer operational and much of the facility has been demolished. Wastewater that formerly went to this plant is now pumped to the Custer Hill WWTP for treatment.

Wastewater from the Main Post may have included some petroleum products and automotive chemicals. In particular, this sludge had the potential to contain higher concentrations of heavy metals than typical sewage sludges since it received discharge from the industrial treatment plant at Building 721. In addition, print shops, photo-processing facilities, pesticide areas, paint shops, furniture repair and dental facilities were located at Main Post and discharged wastewater to this plant (LBA, 1993).

There is no record of any previous site investigations having been conducted at the Main Post WWTP, including the sludge drying beds.

# 6.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Main Post WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil and groundwater samples were collected on July 7, 2006.

Five direct-push borings (DP01-DP05) were advanced around the perimeter of the former sludge drying bed location (Figure 6-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore<sup>™</sup> sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site analytical laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected and analyzed at an off-site analytical laboratory for RCRA metals (USEPA Method 6010/7000). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Main Post WWTP Sludge Drying Beds.

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

Direct-push soil analytical results (positive hits only) for the Main Post WWTP Sludge Drying Beds are presented in Table 6-1, and detections above screening criteria are presented in Figure 6-2. Arsenic,

#### Main Post WWTP Sludge Drying Beds (FTRI-025)

barium, cadmium, chromium, lead, mercury, and silver were detected in the direct-push boring soil samples. Arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively, for arsenic. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in 15 out of 16 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.1 mg/kg (DP05; 11 to 12 ft bgs) to 8.8 mg/kg (DP05; 6 to 7 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-push boring locations and in 12 out of 16 of the soil samples collected at various depths from those borings, with concentrations depths from those borings, with concentrations depths from those borings, with concentrations of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-push boring locations and in 12 out of 16 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.2 mg/kg (DP01, 10 to 11 ft bgs) to 8.8 mg/kg (DP05, 6 to 7 ft bgs). However, none of the arsenic detections exceeded either the industrial or residential RSK of 38 and 11 mg/kg, respectively. Mercury was detected in Direct-Push Borings DP01 (0- to 1-ft interval), DP03 (1- to 2-ft, 7- to 8-ft, and 8.5- to 9.5-ft intervals), and DP05 (1- to 2-ft interval) at concentrations ranging from 0.2 to 7.6 mg/kg. These concentrations did not exceed the residential and industrial PRGs or the industrial RSK for mercury. However, two detections did exceed the residential RSK for mercury of 2.0 mg/kg.

Arsenic exceedences are a result of naturally occurring, high concentrations which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the Region 9 PRGs for migration to groundwater (DAF 20). An exceedence of the SSL DAF 20 of 38 mg/kg for chromium was present in two samples (DP03, 7 to 8 ft bgs and DP03, 8.5 to 9.5 ft bgs) at concentrations of 41 mg/kg and 47 mg/kg, respectively. In addition, an exceedence of the SSL DAF 20 of 38 mg/kg for silver was present in only one sample (DP03, 8.5 to 9.5 ft bgs) at a concentration of 38 J (estimated) mg/kg. The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP02 (6.5 to 7.5 ft bgs), DP04 (7 to 8 ft bgs), and DP05 (6 to 7 ft bgs) at concentrations ranging from 7.2 (DP02, 6.5 to 7.5 ft bgs) to 8.8 mg/kg (DP05, 6 to 7 ft bgs).

Groundwater analytical results (positive hits only) for the Main Post WWTP Sludge Drying Beds are presented in Table 6-2, and detections above screening criteria are presented in Figure 6-3. Arsenic, barium, cadmium, chromium, lead, mercury, and selenium were detected in unfiltered groundwater samples taken from the direct-push borings at the Main Post WWTP Sludge Drying Beds. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only arsenic, barium, cadmium, chromium, and lead were detected in filtered groundwater samples taken at this site. Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples taken from Direct-Push Boring DP04, in which arsenic was detected at a concentrations of 0.027 mg/L and 0.018 mg/L (duplicate). Since no USEPA Region 9 tap water PRG exists for lead, the action level of 0.015 mg/L was used as a screening tool. The KDHE RSK for lead was only exceeded in Direct-Push Boring DP04, with a concentration of 0.018 mg/L.

#### 6.4 DISCUSSION AND RECOMMENDATIONS

The Main Post WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results are summarized as follows:

- Only arsenic and mercury were detected above screening criteria.
- Arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. Mercury in soil exceeded Region 9 residential PRGs. All results were below the KDHE industrial RSKs for arsenic and mercury. Exceedences of arsenic are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples collected from the Main Post WWTP Sludge Drying Beds.
- The action level (KDHE RSK) of 0.015 mg/L for lead was just slightly exceeded in only one sample.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Main Post WWTP Sludge Drying Beds site is recommended for closed status.

\* \* \* \* \*

#### 7.0 RANGE COMPLEX WASTEWATER LAGOONS (FTRI-026) 7.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Range Complex Wastewater Lagoons are located just west of the Multipurpose Range Complex (MPRC) on East West Road near Highway 77. The MPRC is located in the extreme northwest corner of Fort Riley (Figures 1-1 and 7-1). Three lagoons are present; the two eastern lagoons are approximately 200 ft square and the single western lagoon is approximately 300 ft square. The lagoons are surrounded by a perimeter fence, with the area inside the fence consisting of mowed grass. The three wastewater evaporation lagoons are lined with clay (Army Environmental Hygiene Agency [AEHA], 1988). During the October 2005 site visit, it was noted that only the southeastern lagoon contained water; the northeastern and western lagoons were dry.

The site is located in an upland area of Fort Riley, and is underlain by bedrock (interbedded limestone and shale), covered by unconsolidated material. This unconsolidated soil consists of residual soil and possibly loess. The depth to bedrock in the vicinity of the wastewater lagoons is approximately 12 to 33 ft bgs. Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local topography, groundwater would be expected to flow to the west, towards the unnamed drainage located about 200 ft west of the west lagoon. Overland flow will also be to the west, towards this drainage.

Two water supply wells serve the MPRC. Water well 305 was constructed approximately 150 ft east of the waste water lagoons and Water Well 306 was constructed approximately 800 ft east of the waste water lagoons. According to the information provided by Fort Riley, Water Well 305 is located near Building 9305 and has a depth of 160 ft and the Water Well 306 is located near Building 9306 and has a depth of 126 ft and was screened at a depth of 100 to 120 ft bgs, and had a static water level of approximately 80 ft bgs at the time of construction (Figure 7-1). No other known supply wells are within a one-mile radius of the Site.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

#### 7.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The wastewater evaporation lagoons have been in use since 1987. Untreated wastewater is discharged directly to the evaporation lagoons. The untreated domestic wastewater flows to the lower evaporation lagoon via gravity as the solids are settled out (AEHA, 1988). During the October 2005 site visit, the lagoons appeared to be in good condition.

Wastewater management at the Range Complex Wastewater Lagoons is conducted in accordance with National Pollutant Discharge Elimination System permit F-KS97-P002. The permit specifies that no discharge is permitted from the lagoons to the surface waters of the State. Solids and sludge from the wash bays or lagoons are disposed of in a manner approved by KDHE. Runoff contained in the oil storage dike area(s) and tank farm secondary containment areas are visually inspected to determine if removal of oil and grease is necessary prior to discharge. All vegetation on the dikes and at the water's edge is properly maintained by regular mowing of grass, and the removal of cattails and trees.

There is no record of any environmental sampling being conducted in the vicinity of the wastewater lagoons.

#### 7.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil samples were collected at the Range Complex Wastewater Lagoons as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 19, 2006. Groundwater samples were planned, but could not be collected due to refusal prior to reaching groundwater.

Four direct-push borings (DP01-DP04) were advanced northwest of the West Lagoon (DP01), southwest of the West Lagoon (DP02), northwest of the Northeast Lagoon (DP03), and southwest of the Southeast Lagoon (DP04) (Figure 7-1). These direct-push borings were continuously sampled from the ground surface to refusal using a 2-inch Macrocore<sup>™</sup> sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced in attempt to reach the water table, but refusal was obtained prior to reaching groundwater, so no groundwater samples were collected. No soil samples were collected below a depth of 12 ft bgs.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B. Direct-push soil analytical results (positive hits only) for the Range Complex Wastewater Lagoons are presented in Table 7-1, and detections above screening criteria are presented in Figure 7-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and arsenic PRGs were present in all of the direct-boring locations and in 12 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.5 mg/kg (DP04, 9 to 11 ft bgs) to 8 mg/kg (DP01, 11 to 12 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-boring locations and in 11 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from those borings, with concentrations ranging from 4.6 mg/kg (DP01, 7 to 8 ft bgs) to 8 mg/kg (DP01, 11 to 12 ft bgs). Due to the many exceedences of the residential arsenic KDHE RSK of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, four soil samples did exceed the KDHE RSK value for soil to groundwater protection pathway of 5.84 mg/kg for arsenic. These samples had arsenic concentrations of 8 mg/kg (DP01, 11 to12 ft bgs), 6.3 mg/kg (DP03, 1 to 2 ft bgs), 7.1 mg/kg (DP03, 5 to 6 ft bgs), and 7.2 mg/kg (DP04, 1 to 2 ft bgs).

#### 7.4 DISCUSSION AND RECOMMENDATIONS

The Range Complex Waste Water Lagoons are currently located within the Impact Area portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs.
   However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Range Complex Wastewater Lagoons are recommended for closed status.

\* \* \* \* \*

#### 8.0 **REFERENCES**

- Army Environmental Hygiene Agency (AEHA), 1988, Interim Final Report, Hazardous Waste Management Consultation No. 37-26-.0190-89, Fort Riley, Kansas. May 9-13.
- Burns & McDonnell Engineering Company, Inc. (BMcD), 1998. Draft Final Sampling Verification Report for the East and West Sedimentation Ponds at Custer Hill, Fort Riley, Kansas. July 29.
- BMcD, 2003, Installation-Wide Investigative-Derived Waste Management Plan for Environmental Investigations, Fort Riley, Kansas (IW-IDW).
- Environmental Chemical Corporation, 1999. Working Draft Data Summary Report TPH Contaminated Sediments/Soils Removal from Two Sedimentation Ponds at Fort Riley, Kansas. August 6.
- Kansas Department of Health and Environment (KDHE), 2003, Risk-Based Standards for Kansas, RSK Manual 3<sup>rd</sup> Version, March.
- Louis Berger & Associates, Inc. (LBA), 1993, Installation Wide Site Assessment for Fort Riley, Kansas. December 7, 1992, with revisions dated February 16, 1993.
- LBA, 1994, Draft Final Site Investigation Report for High Priority Sites at Fort Riley, Kansas. June 20, 1994.
- Malcolm Pirnie, Inc. (MP) and BMcD, 2004a, Installation-Wide Sampling and Analysis Plan for Environmental Investigations at Fort Riley, Kansas (IW-SAP).
- MP-BMcD, 2004b, Installation-Wide Site Safety and Health Plan for Environmental Investigations at Fort Riley, Kansas (IW-SHP).
- MP-BMcD, 2006a, Sampling and Analysis Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (SAPA).
- MP-BMcD, 2006b, Site-Specific Safety and Health Plan, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (SSHP).
- MP-BMcD, 2006c, Investigative-Derived Waste Management Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (IDWPA).
- MP-BMcD, 2006d, Work Plan, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (WP).
- MP-BMcD, 2006e, Quality Control Summary Report, Expanded Site Investigation Multiple Sites, Wastewater Sites (Group 2), Fort Riley, Kansas (QCSR).
- United States Environmental Protection Agency (USEPA), 2004a, Region 9 Preliminary Remediation Goals (PRG) Table, October.
- USEPA, 2004b, 2004 Edition of the Drinking water Standards and Health Advisories, EPA 822-R-04-005, Office of Water, Winter.

United States Geological Survey (USGS), 2005, Potentiometric Surface (Water Table) in Alluvium for March 28-29, 2005, Camp Funston Area, Fort Riley, Kansas.

\* \* \* \* \*

.

.

• •

.

.

•

Tables

.

#### Table 1-1ESI Site SummaryPesticide / PCB SitesExpanded Site InvestigationFort Riley, Kansas

Site Name		RCRA Regulatory History	,	CERCLA Regulatory History	· · · · · · · · · · · · · · · · · · ·		
Pesticide / PCB Sites (Group 1)		RCRA Part A: Interim Status Nov 1980-Sept 1998	RCRA Part B, Part II HSWA- defers to CERCLA Oct 1, 1998 to Oct 1, 2008	NPL August 1990/ FFA June 1991 PA/PAOC	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
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	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	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 One PCE GW result above MCL No potential risk to HH & E	Confirm St 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 Whitside HSWA, 1998 No potential risk to HH & E based on SI for Custer Hill Golf Course Pesticide Facility		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 1-1ESI Site SummaryPesticide / PCB SitesExpanded Site InvestigationFort Riley, Kansas

Site Name		RCRA Regulatory History		CERCLA Regulatory History			
PCB Transformer Sites	FTRI- 050		otential risk to HH & E based	Recommended No Further Action	LBA, 1995 No PCB detects above 50 ppm in soil No potential risk to HH & E	threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Milford Campground / Marina	FTRI- 055		A, 1998 otential risk to HH & E based			threat to HH & E	No actions are necessary to protect HH & E; Closed Status

Pa

1 .

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 - Invin Army Community Hospital IWSA - Instaltation 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 - Potychlorinated 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 1-1ESI Site SummaryWastewater SitesExpanded Site InvestigationFort Riley, Kansas

Site Name		RCRA Regulatory History	/	CERCLA Regulatory History			
Wastewater Sites (Group 2)		RCRA Part A: Interim Status Nov 1980-Sept 1998	RCRA Part B, Part II HSWA- defers to CERCLA Oct 1, 1998 to Oct 1, 2008	NPL August 1990/ FFA June 1991 PA/PAOC	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
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	No CERCLA contaminants East Pond Free Product in GW West Pond No threat to HH &	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; Clòsed 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 PACC - Potential Area of Concern PCB - Polychlorinated Biphenyl PCE - Tetrachloroethéne PCL - 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 1-1ESI Site SummaryPetroleum / VOC SitesExpanded Site InvestigationFort Riley, Kansas

Site Name		RCRA Regulatory History		CERCLA Regulatory History			
Petroleum / VOC Sites (Group 3)		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA- defers to CERCLA	NPL August 1990/ FFA June 1991	Cl Danasta	ESI 2006-2007	ESI 2006-2007, Actions
		Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008		SI Reports		Taken/Recommended
Abandoned VÕC Tanks - IACH		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		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 retease		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 goundwater 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, 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 8 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

P.

7

#### Ta...e 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 & Environ	nent	PPM - Parts per Million
HSWA - Hazardous and Solid Wa	aste Amendment	RCRA - Resource Conservation and Recovery Act
ACH - Irwin Army Community Ho	spital	SI - Site Investigation
WSA - Installation Wide Site Ass	essment	SWMU - Solid Waste Management Unit
KDHE - Kansas Department of He	ealth and Environment	TPH - Total Petroleum Hydrocarbons
LBA - Louis Berger and Associate	95	UST - Underground Storage Tank
MCL - Maximum Contaminant Lev	/el	WWTP - Wastewater Treatment Plant

#### Table 1-1ESI Site SummaryFormer Landfill /Incinerator SitesExpanded Site InvestigationFort Riley, Kansas

	- · · · · ·			CERCLA Regulatory History			
Site Name		RCRA Regulatory Histor					<u> </u>
Former Landfill/Incinerator Sites	L	RCRA Part A: Interim Status	RCRA Part B, Part II HSWA- defers to CERCLA	NPL August 1990/ FFA June 1991			ESI 2006-2007, Actions
(Group 4)		Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC		ESI 2006-2007	Taken/Recommended
Whitside C/D Landfill		AEHA, 1988 SWMU-Proposed environmental sampling	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (RCRA Subtitle D)	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		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 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	HSWA, 1998 No potential risk to HH & E based on site visit	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		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		AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 Recommends investigation, review, or remediation	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		HSWA, 1998 Recommends investigation, review, or remediation	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Detected lead, antimony & VC above MCL in GW		No actions are necessary to protect HH & E; Closed Status
Old Whitside Incinerator	FTRI- 037		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
Inactive Landfills - Camp Whitside	FTRI- 052		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	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 Contarninant 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

Р

#### T e 1-1 ESI Site Summary POL Sites Expanded Site Investigation Fort Riley, Kansas

	•		

Site Name		RCRA Regulatory Histor	ý	CERCLA Regulatory History						
POL Sites (Group 5)		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA- defers to CERCLA	NPL August 1990/ FFA June 1991						
		Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended			
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	FTŘÍ- 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		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 **Pond Water Detections** Wash Rack Reservoir (FTRI-020) Wastewater Sites Expanded Site Investigation Fort Riley, Kansas

					•						
			STANDARDS								
	Old Was	h Rack Reser	Cell 4								
	CVWF- CH-S1- R	CVWF- CH-B-R	CVWF- CH-001- R <sup>A</sup>	CVWF- CH-C14	CVWF- CH-C22	CVWF- CH-C31 <sup>B</sup>	CVWF- CH-009-C3	CVWF- CH-43-C4	MCL	KAL	KNL
Semi-Volatiles											
TPH-DRO	330	670	550	720	280	250	440	ND			
Bis(2-Ethylhexyl) Phthalate	ND	23	ND	ND	ND .	ND	ND	ND			
Metals (Priority	Pollutant)						· ·				
Lead	ND	ND	ND	ND	ND	ND	ND	0.004	0.015	0.05	
Silver	ND	ND	ND	ND	0.03	.01	ND	ND	·	0.05	

Note: all results in dry weight

Not Detected. ND:

Standard Not Available. ---:

Duplicate of CVWF-CH-S1-R A:

Duplicate of CVWF-CH-009-C3 **B**:

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations. KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations. MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office Office of Water, United States Environmental Protection Agency, December 1993.

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

#### Table 2-2Pond Sediment DetectionsWash Rack Reservoir (FTRI-020)Wastewater SitesExpanded Site Investigation

Fort Riley, Kansas

					,			[orga	DIMENT inics µg/kg] anics mg/kg									
	0	ld Wash R	ack Reserv	voir		Cell 1			Cell 2			Cell 3			Ce	ell 4 ···		EPA Risk-Based Levels <sup>D</sup>
	SED-CR; SED-CR1 <sup>4</sup>	005-R <sup>B</sup>	Sed- Outlet-R	Sed-Inlet-R	Sed Outlet- C10	Sed C11	Sed Inlet- C12	Sed Outlet = C20	Sed-Inlet C21	Sed C24	Sed Outlet C30	C34	C33	Sed Outlet-C40	041-C4 <sup>c</sup>	44-C4	45-C4	Commercial/ Industrial Soil
Volatiles												• • • • • • • • • • • • • • • • • • • •					· · ·	t saide state s
Methylene Chloride (Dichloromethane)	ND	ND	ND	ND	ND	24	ND	ND	ND <sup>M</sup>	ND	ND	ND	ND	ND	ND	ND	ND	62,000-20,000,000
Toluene	NDM	ND	ND	ND	ND	ND	220	ND	ND	ND	ND	ND	ND	ND	ND	ND ·	ND	280,000-200,000,000
TPH-GRO	130,000	ND <sup>H,M</sup>	ND <sup>H,M</sup>	ND <sup>H,M</sup>	ND <sup>H</sup>	ND <sup>H</sup>	1,200 <sup>H</sup>	ND <sup>H</sup>	3,700 <sup>н</sup>	ND <sup>H</sup>	ND <sup>H</sup>	ND	ND	ND	. ND <sup>H</sup>	ND	ND	
m,p-Xylene	ND	ND	2,400	ND <sup>M</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	99,000-500,000,000
Semi-Volatiles									******	<b>-</b>	*		1	L	I		1ł	
TPH-DRO	4,400,000	32,000,000	8,000,000	18,000,000	210,000	180,000	570,000	322,000	3,100,000	ND	87,000	17,000 н	31,000 <sup>н</sup>	14,000 <sup>н.</sup>	20,000 <sup>н</sup>	15,000 <sup>н</sup>	10,000 <sup>н</sup>	
Bis(2-Ethylhexyl) Phthalate	ND	25,000 <sup>M</sup>	27,000™	51,000™	ND	ND	ND	ND	ND	ND	ND	ND	ND	. ND	ND	ND	- ND	50,000-5,000,000
Di-n-butyl Phthalate	ND	ND	ND	21,000™	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100,000-100,000,000
Metals (Priority	Pollutant)				-				<b></b>		·	ı	I	· ·	1	- <b>L</b>	L L	
Arsenic	6'	61	61	34	3,	21	63	3,	51	37	31	21	18*	41	3,	4	34	0.4-310
Beryllium	0.8*	0 9 <sup>t</sup>	ND	0.5*	ND	0.81	ND	ND	ND	0.9*	0.5*	0.5*	0.5*	0.71	0.6*	0.6×	6.71	0.1-1,000
Cadmium	4.7	8.4	7.5	· 4.7	0.8	1.0	4	0.8	4.3	1.0	1.1	0.8	1.5	0.8	0.7	0.7	0.7	100-1,000
Chromium	25	33	26	21	14	20	5	12	32	23	19	- 15	19	21	18	17	16	5,100-1,000,000
Copper	23	36	31	22	9	11	6	11 ~	27	13	12	10	15	12	10	12	10	10,000-76,000
Lead	30	40	40	30	11	10	64	5	20	15	10	12	75	11	11	14	13	500-1,000 <sup>E</sup>
Nickel	19	21	18	- 14	12	15	4	12	25	21	16	13	17	18	15	16	13	5,000-41,000 <sup>F</sup>
Zinc	130	290	.260	110	35	45	35	50	200	56	51	36	54	49	45	38	37	80,000-310,000

Shaded values represent concentrations that exceed carcinogen levels.

Sample concentration exceeded EPA Regions III, IX and X (10") risk based standard for Arsenic as a

I: Sample concentration exceeded EPA Regions III and X (10<sup>-</sup>) risk based standard for Beryllium as a carcinogen.

Sample concentration exceeded EPA Regions III and X (104) risk based standard for Arsenic as a carcinogen.

H: Result is an estimated value. Recommended holding time was exceeded.

Reporting limit higher than normal due to matrix interference.

Note: All samples have the prefix "CVWF-CH-".

α:

All results in dry weight

Sample concentration exceeded EPA Region X (10<sup>4</sup>) risk based standard for Beryllium as a carcinogen.

A: Resample; analyses included VOA, TPH-GRO only.

B: Duplicate of CVWF-CH-Sed Outlet-R

C: Duplicate of CVWF-CH-Sed Outlet C40

D: Risk-based guideline concentrations are based on a range to represent EPA Regions III, DX & X from the following citations: Region III Risk-based Concentration Table, 2nd quarter 1994, Roy L. Smith, Senior Toxicologist - Technical Support Section; Region IX Preliminary Remediation Goals (PRGs) 1st quarter 1993, Stanford J. Smucker, PhD, Regional Toxicologist; and Region X-Appendix II-Human Health Risk-based Preliminary Remediation Goals for Water and Soil, October 1992.

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

F: Soluble salts.

ND: Not detected,

carcinogen.

----:

M:

**†**:

λ:

Standard Not Available.

Page 1 of 1

#### Table 2-3

#### Groundwater Detections Wash Rack Reservoir (FTRI-020)

Wastewater Sites Expanded Site Investigation Fort Riley, Kansas

<u>Analyte</u> (µg/l organics)		<u>Sample L</u> Sample				
(mg/l inorganics)	WR-93-01	Regulatory Comparison Values				
		KAL	KNL	MCL		
Arsenic	0.02	0.05		0.05		

---: Standard Not Available.

- KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
- KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
- MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

### Table 2-4Stream Water DetectionsNorth and East of the Cell Complex (FTRI-020)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

		AQUEOUS (mg/	STA	ANDARDS (mg	;/L)	
	CVWF-CH- Stream AQ-1	CVWF-CH- Stream AQ-5	CVWF-CH- Stream AQ 6	MCL	KAL	KNL
Metals (Priority Pollutant) Lead	ND	0.008	ND	0.015	0.05	
Zinc	ND	0.04	ND		5.0	

ND: Not detected.

- ---: Standard Not Available.
- KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
- KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
- MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

### Table 2-5Stream Sediment DetectionsNorth and East of the Cell Complex (FTRI-020)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

		SEDIMENT [organics µg/kg] [inorganics mg/kg]								
	CVWF- CH-Stream Sed 1	CVWF- CH-101 <sup>A</sup>	CVWF-CH- Stream Sed	CVWF-CH- Stream Sed 3	CVWF-CH- Stream Sed 4	CVWF-CH- Stream Sed 5	CVWF-CH- Stream Sed 6			
Semi-Volatiles TPH-DRO	1,100 <sup>H</sup>	ND <sup>H,R</sup>	ND <sup>H,R</sup>	ND <sup>R</sup>	ND <sup>H,R</sup>	38 <sup>н</sup>	ND <sup>H,R</sup>			
Metals (Priority Pollutant) Arsenic	9'	91	41	10'	81	41	31	0.4-310		
Beryllium	1.1*	0.87	0.71	ND	ND	0.6*	0.71	0.1-1,000		
Cadmium	1.3	0.9	0.8	1.1	1.0	0.8	0.7	100-1,000		
Chromium	31	21	17	25	24	15	16	5,100-1,000,000		
Copper	20	15	13	17	14	10	11	10,000-76,000		
Lead	15	18	8	18	22	16	12	500-1,000 <sup>c</sup>		
Nickel	27	21	16	22	21	13	18	5,000-41,000 <sup>D</sup>		
Zinc	68	44	41	57	50	43	40	80,000-310,000		

Note: all results in dry weight

- ND: Not detected.
- ---: Standard Not Available.
- H: Result is an estimated value. Recommended holding time was exceeded.
- R: Data rejected by data validator.
- Sample concentration exceeded EPA Regions III, IX and X (10<sup>-4</sup>) risk based standard for Arsenic as a carcinogen.
- λ: Sample concentration exceeded EPA Regions III and X (10<sup>-4</sup>) risk based standard for Arsenic as a carcinogen.
- I: Sample concentration exceeded EPA Regions III and X (10<sup>-4</sup>) risk based standard for Beryllium as a carcinogen.

- α: Sample concentration exceeded EPA Region X (10<sup>-4</sup>) risk based standard for Beryllium as a carcinogen.
- A: Duplicate of CVWF-CH-Stream Sed 1.
- B: Risk-based guideline concentrations are based on a range to represent EPA Regions III, IX & X from the following citations: Region III Risk-based Concentration Table, 2nd quarter 1994, Roy L. Smith, Senior Toxicologist Technical Support Section; Region IX Preliminary Remediation Goals (PRGs) 1st quarter 1993, Stanford J. Smucker, PhD, Regional Toxicologist; and Region X-Appendix II-Human Health Risk-based Preliminary Remediation Goals for Water and Soil, October 1992.
- C: EPA Directive Number OSWER 9355.4-02, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites.
- D: Soluble salts.

Shaded values represent concentrations that exceed carcinogen levels.

Table 2-5

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	`````	KDHE RSKs (res/ind)	020-DP01/SB01 7/14/2006 0 - 2 ft 06070893	020-DP01/SB11 7/14/2006 0 - 2 ft 06070894 Duplicate	020-DP01/SB02 7/14/2006 7 - 8 ft 06070895	020-DP01/SB03 7/14/2006 11 - 12 ft 06070896
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.6	5.4	4.6	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	170	170	230	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.85	0.89	0.8	0.79
Chromium, Total	mg/kg	210 / 450	390 / 4,000	22	22	21	23
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	12	11	11
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1.2 U	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

			KDHE RSKs (res/ind)	020-DP02/SB01 7/14/2006 0 - 1 ft 06070897	020-DP02/SB02 7/14/2006 7 - 8 ft 06070898	020-DP02/SB03 7/14/2006 9 - 10 ft 06070899	020-DP03/SB01 7/14/2006 0 - 1 ft 06070900
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.7	1.2 U	1.4	3.3
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	210	100	62	100
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.8	0.95	0.81	0.88
Chromium, Total	mg/kg	210 / 450	390 / 4,000	22	34	22	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	9.9	3.2	2.5	. 7
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.1 U	1.2 U

Notes:

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

All detections are in **bold** font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	, , , , ,	KDHE RSKs (res/ind)	020-DP03/SB02 7/14/2006 6 - 7 ft 06070901	020-DP03/SB03 7/14/2006 10 - 11 ft 06070902	020-DP04/SB01 7/14/2006 0 - 1 ft 06070903	020-DP04/SB02 7/14/2006 7 - 8 ft 06070904
Metals, Total	UNITS						
Arsenic, Total	· mg/kg	0.39 / 1.6	11 / 38	4.4	3.2	5.3	32
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	72	66	180	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.97	0.94	1.4
Chromium, Total	mg/kg	210 / 450	390 / 4,000	27	26	22	40
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.2	2.9	10	24
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.9	1.4	1.2 U	1.3 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	•		KDHE RSKs (res/ind)	020-DP04/SB22 7/14/2006 7 - 8 ft 06070905 Duplicate	020-DP04/SB03 7/14/2006 11 - 12 ft 06070906	020-DP05/SB01 7/17/2006 1 - 2 ft 06071011	020-DP05/SB02 7/17/2006 6 - 7 ft 06071012
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	33	7.1	6.4	4.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	66	100	160
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.4	0.85	0.8	0.59 U
Chromium, Total	mg/kg	210/450	390 / 4,000	39	26	21	17.4
Lead, Total	mg/kg	400 / 800	400 / 1,000	28	6.5	8.8	11.3
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2	1.2 U	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP05/SB03 7/17/2006 9 - 10 ft 06071013	020-DP06/SB01 7/17/2006 1 - 2 ft 06071014	020-DP06/SB02 7/17/2006 5 - 6 ft 06071015	020-DP06/SB03 7/17/2006 9 - 10 ft 06071016
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.2	1.5	6.3	11
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	94	180	26
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	3.1 U	0.6	0.6	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	27	24	7.7
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	2.7	11	12.6
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 Ü	1.2 U	3.4

Notes:

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

exceedances are shaded.

All detections are in bold font.

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 applicable / not analyzed

La	Sample Point: Date Sampled: Sample Depth: boratory Number:		KDHE RSKs (res/ind)	020-DP07/SB01 7/17/2006 1 - 2 ft 06071017	020-DP07/SB02 7/17/2006 7 - 8 ft 06071018	020-DP07/SB03 7/17/2006 11 - 12 ft 06071019	020-DP08/SB01 7/17/2006 1 - 2 ft 06071020
Metals, Total	UNITS					· · · · · · · · · · · · · · · · · · ·	
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	3	<b>3.1</b>	3.8	5.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	140	130	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.6 U	0.59 U	1.2
Chromium, Total	mg/kg	210 / 450	390 / 4,000	17	17	17	21
Lead, Total	mg/kg	400 / 800	400 / 1,000	7.8	7.7	9.1	8.9
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.2 U	1.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	, , , ,	KDHE RSKs (res/ind)	020-DP08/SB02 7/17/2006 6 - 7 ft 06071021	020-DP08/SB03 7/17/2006 8 - 9 ft 06071022	020-DP09/SB01 7/17/2006 0.5 - 1.5 ft 06071025	020-DP09/SB01 7/17/2006 0.5 - 1.5 ft 06071025R Reanalysis
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	4.5	6.2	5.7	NA
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	180	150	600	NA
Cadmium, Total	mg/kg	37 / 450	3971,000	0.7	1.1	3 U	NA
Chromium, Total	mg/kg	210 / 450	390 / 4,000	30	20	20	NA
Lead, Total	mg/kg	400 / 800	400 / 1,000	9	9.7	27	7.7
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1.2 U	1.2 U	NA

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	020-DP09/SB02 7/17/2006 7 - 8 ft 06071026	020-DP09/SB03 7/17/2006 9 - 10 ft 06071027	020-DP10/SB01 7/18/2006 1 - 2 ft 06071105	020-DP10/SB02 7/18/2006 7 - 8 ft 06071106
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	7	6	4.3	14
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	170	150	90
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	1.2 U	0.68	0.87
Chromium, Total	mg/kg	210/450	390 / 4,000	22	24	18	18
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	10	11	20
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	2.3 U	1.3 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	020-DP10/SB22 7/18/2006 7 - 8 ft 06071107 Duplicate	020-DP10/SB03 7/18/2006 11 - 12 ft 06071108	020-DP11/SB01 7/18/2006 0 - 1 ft 06071109	020-DP11/SB02 7/18/2006 6 - 7 ft 06071110
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	8.5	<b>4.7</b>	5.8	3.7
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	80	160	130	96
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.3 U	0.9	1	0.82
Chromium, Total	mg/kg	210 / 450	390 / 4,000	13	17	21	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	13	10	8.9	5.8
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.5 U	1.2 U	1.1 U	1.2 U

Notes:

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

exceedances are shaded

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	020-DP11/SB03 7/18/2006 8.5 - 10.5 ft 06071111	020-DP12/SB01 7/18/2006 1 - 2 ft 06071112	020-DP12/SB02 7/18/2006 7.5 - 8 ft 06071113	020-DP12/SB03 7/18/2006 9 - 10.5 ft 06071114
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39/1.6	11 / 38	4.7	4.3	5.8	6.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	190	170	190	290
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.74	· 0.65	1.2 U
Chromium, Total	mg/kg	210/450	390 / 4,000	23	18	19	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	10	12	14
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.4 U	1.1 U	1.2 U	2.5 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

· ·	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	020-DP12/SB33 7/18/2006 9 - 10.5 ft 06071115 Duplicate	020-DP13/SB01 7/14/2006 1 - 2 ft 06070889	020-DP13/SB02 7/14/2006 7 - 8 ft 06070890	020-DP13/SB22 7/14/2006 7 - 8 ft 06070891 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	4.2	5.7	41	5.1
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220	260	100	170
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.69	0.78	6.1	0.7
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	24	140	19
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	9.6	69	11
Selenium, Total	² mg/kg	390 / 5,100	390 / 10,000	2.4 U	1.2 U	12 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	, <i>, ,</i>	KDHE RSKs (res/ind)	020-DP13/SB03 7/14/2006 11 - 12 ft 06070892	020-DP14/SB01 7/13/2006 1 - 2 ft 06070638	020-DP14/SB02 7/13/2006 6 - 7 ft 06070639	020-DP14/SB03 7/13/2006 11 - 12 ft 06070640
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	7.7	5.5	6.9	4.3
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	380	170	200	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.64	0.75	0.66
Chromium, Total	mg/kg	210 / 450	390 / 4,000	25	20	27	30
Lead, Total	mg/kg	400 / 800	400 / 1,000	18	12	15	8.9
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	.2.4 U	1.2 U	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	•		KDHE RSKs (res/ind)	020-DP15/SB01 7/13/2006 1 - 2 ft 06070641	020-DP15/SB02 7/13/2006 7 - 8 ft 06070642	020-DP15/SB03 7/13/2006 10 - 11 ft 06070643	020-DP16/SB01 7/13/2006 1 - 2 ft 06070644
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	6.3	2.6	2.9	7.9
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	210	200	160	190
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.61	1.4	1.4	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	26	46	40	34
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	3.8	3.2	16
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	020-DP16/SB02 7/13/2006 7 - 8 ft 06070645	020-DP16/SB03 7/13/2006 10.5 - 11.5 ft 06070646	020-DP17/SB01 7/13/2006 1 - 2 ft 06070630	020-DP17/SB02 7/13/2006 5 - 6 ft 06070631
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.8	6	4.1	4.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	200	220	160	150
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.63	0.64	0.57 U	0.62 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	25	22	19	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	13	9.4	10
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.1 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

			KDHE RSKs (res/ind)	020-DP18/SB01 7/13/2006 0 - 2 ft 06070632	020-DP18/SB11 7/13/2006 0 - 2 ft 06070633 Duplicate	020-DP18/SB02 7/13/2006 6 - 7 ft 06070634	020-DP19/SB01 7/13/2006 0 - 1 ft 06070635
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	3.9	4.2	5.5	4.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	120	140	140	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.58 U	0.79	0.59 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	20	27	19
Lead, Total	mg/kg	400 / 800	400 / 1,000	9.1	9.3	11	11
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.1 U	1.2 U	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

## Table 2-6Soil DetectionsIndustrial Wastewater System (FTRI-020)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

	Sample Point Date Sampled Sample Depth Laboratory Number		KDHE RSKs (res/ind)	020-DP19/SB02 7/13/2006 6 - 7 ft 06070636	020-DP20/SB01 7/13/2006 1 - 2 ft 06070637
Metals, Total	UNITS	·····			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	<b>4</b> 14	5.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	120	170
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.62 U	0.58 U
Chromium, Total	mg/kg	210/450	390 / 4,000	19	24
Lead, Total	mg/kg	400 / 800	400 / 1,000	8.3	13
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

## Table 2-7Groundwater DetectionsIndustrial Wastewater System (FTRI-020)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

Sample Point:	USEPA Region	USEPA MCLs/	020-DP05/GW01	020-DP07/GW01	020-DP09/GW01	020-DP10/GW01
Date Sampled:	9 PRGs	Action Level	7/17/2006	7/17/2006	7/17/2006	7/25/2006
Sample Depth:	(tap water)		LIQUID	LIQUID	LIQUID	LIQUID
Laboratory Number:			06071023	06071024	06071028	06071767
UNITS						
mg/L	NA	NÁ	0.277	0.316	0.141	0.031
mg/L	NA	NA	2.46	15	2.28	1.19
mg/L	NA	NA	0.019	0.118	· 0.009	0.004
mg/L	NA	NA	0.33	1.37	0.314	0.149
mg/L	NA	· NA	0.731	0.949	0.23	0.044
mg/L	NA	NA	0.0008	0.0002 U	0.0002 U	0.0002 U
UNITS			,			
mg/L	0.000045	0.01	0.01 U	0.01 U	0.016	0.01 U
mg/L	2.6	2	0.37	0.41	0.55	0.96
mg/L	NA	0.015*	0.005 U	0.005 U	0.005 U	0.006
	Date Sampled: Sample Depth: Laboratory Number: UNITS mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	Sample Depth: Laboratory Number: UNITS Mg/L NA mg/L NA mg/L NA mg/L NA mg/L NA mg/L NA mg/L NA mg/L NA mg/L NA mg/L 0.00045 mg/L 2.6	Date Sampled:9 PRGs (tap water)Action LevelSample Depth: Laboratory Number:(tap water)-UNITSmg/LNANAmg/LNANAmg/LNANAmg/LNANAmg/LNANAmg/LNANAmg/LNANAmg/LNANAmg/LNA0.000045mg/L2.62	Date Sampled:         9 PRGs (tap water)         Action Level         7/17/2006 LlQUID           Laboratory Number:         06071023         06071023           UNITS         V         00071023           mg/L         NA         NA         0.277           mg/L         NA         NA         2.46           mg/L         NA         NA         0.019           mg/L         NA         NA         0.33           mg/L         NA         NA         0.331           mg/L         NA         NA         0.0008           mg/L         NA         NA         0.00008           mg/L         NA         NA         0.01 U           mg/L         NA         NA         0.01 U           mg/L         2.6         2         0.37	Date Sampled: Sample Depth: Laboratory Number:         9 PRGs (tap water)         Action Level         7/17/2006 LlQUID         7/17/2006 LlQUID           UNITS         06071023         06071024           UNITS         06071023         06071024           mg/L         NA         NA         0.277           mg/L         NA         NA         2.46           mg/L         NA         NA         0.019           mg/L         NA         NA         0.019           mg/L         NA         NA         0.333           mg/L         NA         NA         0.3949           mg/L         NA         NA         0.00008         0.0002 U           UNITS           0.01 U         0.01 U           mg/L         2.6         2         0.37         0.41	Date Sampled: Sample Depth: Laboratory Number:         9 PRGs (tap water)         Action Level         7/17/2006 LIQUID         7/17/2006 LIQUID         7/17/2006 LIQUID         7/17/2006 LIQUID           UNITS         06071023         06071024         06071028           mg/L         NA         NA         0.277         0.316         0.141           mg/L         NA         NA         2.46         15         2.28           mg/L         NA         NA         0.019         0.118         0.009           mg/L         NA         NA         0.33         1.37         0.314           mg/L         NA         NA         0.0731         0.949         0.23           mg/L         NA         NA         0.0008         0.0002 U         0.0002 U           mg/L         NA         NA         0.01 U         0.011 U         0.016           mg/L         0.000045         0.01         0.01 U         0.01 U         0.016           mg/L         2.6         2         0.37         0.41         0.55

Notes:

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

\* Value is an action level, not an MCL.

All detections are in bold font.

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

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

## Table 2-7Groundwater DetectionsIndustrial Wastewater System (FTRI-020)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

······································	Comple Deint	USEPA Region	USEPA MCLs/	020-DP11/GW01	020-DP12/GW01
	Sample Point:	•			1
	Date Sampled:		Action Level	7/18/2006	7/18/2006
	Sample Depth:	(tap water)		LIQUID	LIQUID
	Laboratory Number:			06071116	06071117
Metals, Total	UNITS				
Arsenic, Total	mg/L	NA	NA	0.17	0.46
Barium, Total	mg/L	NA	NA	6.6	5.4
Cadmium, Total	mg/L	NA	NA	0.23	0.15
Chromium, Total	mg/L	NA	NÁ	0.56	0.58
Lead, Total	mg/L	NA	NA	0.32	0.69
Mercury, Total	mg/L	NA	NA	0.0002 U	0.0002 U
Metals, Dissolved	UNITS				
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U	0.022
Barium, Dissolved	mg/L	2.6	2	0.36	0.57
Lead, Dissolved	mg/L	NA	0.015*	0.005 U	0.005 U

Notes:

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

\* Value is an action level, not an MCL.

All detections are in bold font.

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

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

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	022-DP01/SB01 7/10/2006 0 - 1 ft 06070304	022-DP01/SB02 7/10/2006 7 - 8 ft 06070305	022-DP01/SB03 7/10/2006 8 - 12 ft 06070306	022-DP01/SB33 7/10/2006 8 - 12 ft 06070307 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	1.9	1.7 (S. A.	1 U	10
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	63	68	26	39
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.57 U	0.51 U	0.51 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	6.2	5.4	1 U	1.2
Lead, Total	mg/kg	400 / 800	400 / 1,000	6.2	3.2	1.3	1.4
Notes:	••						

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

All detections are in bold font.

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 applicable / not analyzed

	•		KDHE RSKs (res/ind)	022-DP02/SB01 7/10/2006 0 - 1 ft 06070291	022-DP02/SB02 7/10/2006 7 - 8 ft 06070292	022-DP02/SB03 7/10/2006 11 - 12 ft 06070293	022-DP03/SB01 7/10/2006 0 - 1 ft 06070294
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	2.1	2.3	1 U	3.4
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	84	. 89	31	83
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.6 U	0.51 U	0.56 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	9	7.2	1.2	9.6
Lead, Total	mg/kg	400 / 800	400 / 1,000	52	4.2	1.2	6.6

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	022-DP03/SB02 7/10/2006 7 - 8 ft 06070295	022-DP03/SB03 7/10/2006 10 - 11 ft 06070296	022-DP04/SB01 7/10/2006 0 - 1 ft 06070297	022-DP04/SB02 7/10/2006 5 - 6 ft 06070298
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	3.2	<b>8.1</b> / The second	3.7	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	200	140	210
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.62 U	0.85	0.56 U	0.74
Chromium, Total	mg/kg	210/450	390 / 4,000	14	21	12	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	8.3	10	6.3	10

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	022-DP04/SB03 7/10/2006 9 - 12 ft 06070299	022-DP04/SB33 7/10/2006 9 - 12 ft 06070300 Duplicate	022-DP05/SB01 7/10/2006 0 - 1 ft 06070301	022-DP05/SB02 7/10/2006 6 - 7 ft 06070302
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	1.3	1.2	2.3	2.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	49	40	75	110
Cadmium, Total	mg/kg	37./ 450	39 / 1,000	0.51 U	0.52 U	0.54 U	0.59 U
Chromium, Total	mg/kg	210/450	390 / 4,000	2	2	6.2	8.4
Lead, Total	mg/kg	400 / 800	400 / 1,000	1.8	2	4.4	4

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Date Sampled Sample Depth Laboratory Number			KDHE RSKs (res/ind)	022-DP05/SB03 7/10/2006 11 - 12 ft 06070303	
Metals, Total		UNITS				
Arsenic, Total		mg/kg	0.39 / 1.6	11 / 38	1.2	
Barium, Total		mg/kg	5,400 / 67,000	5,500 / 140,000	24	
Cadmium, Total		mg/kg	37 / 450	39 / 1,000	0.51 U	
Chromium, Total		mg/kg	210 / 450	390 / 4,000	1.4	
Lead, Total		mg/kg	400 / 800	400 / 1,000	1.5	

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point:	USEPA Region	USEPA MCLs	022-DP01/GW01	022-DP02/GW01	022-DP02/GW11	022-DP03/GW01
	Date Sampled:	9 PRGs		7/10/2006	7/10/2006	7/10/2006	7/10/2006
	Sample Depth:	(tap water)		LIQUID	LIQUID ,	LIQUID	LIQUID
	Laboratory Number:		,	06070285	06070286	06070287	06070288
						Duplicate	
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.229	0.088	0.123	0.135 R
Barium, Total	mg/L	NA	NA	5.01	3.59	5.36	3.54
Cadmium, Total	mg/L	NA	NA	0.018	0.011	0.016	0.011 R
Chromium, Total	mg/L	: NA	NA	0.846 J	0.581 J	0.66 J	0.542 J
Lead, Total	mg/L	NA	NA	0.315 J	0.183 J	0.271 J	0.215 J
Selenium, Total	mg/L	NA	NA	0.02 U M	0.036	0.044	0.037 R
Metals, Dissolved	UNITS						
Barium, Dissolved	mg/L	2.6	2	0.35	0.43	0.43	0.26
Selenium, Dissolved	mg/L	0.18	0.05	0.01	0.01 U	0.01 U	0.01 U

Notes:

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

All detections are in bold font.

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

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

· · · · · · · · · · · · · · · · · · ·	Sample Point:	USEPA Region	USEPA MCLs	022-DP03/GW01	022-DP04/GW01	022-DP05/GW01
	Date Sampled:	9 PRGs	OCEI / MOED	7/10/2006	7/10/2006	7/10/2006
	Sample Depth:			LIQUID	LIQUID	LIQUID
	Laboratory Number:			06070288R	06070289	06070290
				Reanalysis		
Metals, Total	UNITS					
Arsenic, Total	mg/L	NA	NA	0.142	1.01	0.124
Barium, Total	mg/L	NA	NA	NA	10.3	5.44
Cadmium, Total	mg/L	NA	NA	0.016	0.028	0.017
Chromium, Total	mg/L	NA	NA	0.663 J	0.774 J	0.7 J
Lead, Total	mg/L	NA	NA	NA	0.424 J	0.275 J
Selenium, Total	mg/L	NA	NA	0.059	0.05 U M	0.05 U M
Metals, Dissolved	UNITS					
Barium, Dissolved	mg/L	2.6	2	NA	0.38	0.26
Selenium, Dissolved	mg/L	0.18	0.05	NA	0.01 U	0.01 U
N 1 1					-	

Notes:

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

exceedances are shaded.

All detections are in bold font.

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

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

## Table 4-1Soil DetectionsCuster Hill WWTP (FTRI-023)Wastewater SitesWastewater SitesExpanded Site InvestigationFort Riley, Kansas

	Date San	mple Point: e Sampled: nple Depth: ry Number:		KDHE RSKs (res/ind)	023-DP01/SB01 7/11/2006 1 - 2 ft 06070409	023-DP02/SB01 7/11/2006 1 - 2 ft 06070401	023-DP02/SB02 7/11/2006 5 - 6 ft 06070402	023-DP03/SB01 7/11/2006 0 - 1 ft 06070406
Metals, Total		UNITS						
Arsenic, Total		mg/kg	0.39 / 1.6	11 / 38	4.8	6.7	12 U	2.6
Barium, Total		mg/kg	5,400 / 67,000	5,500 / 140,000	190	88	410	170
Cadmium, Total		mg/kg	37 / 450	39 / 1,000	0.6	0.62	3 U	0.62
Chromium, Total		mg/kg	210/450	390 / 4,000	15	26	7.9	26
Lead, Total		mg/kg	400 / 800	400 / 1,000	. 11	4.6	6.4	5.5

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	. The second sec	KDHE RSKs (res/ind)	023-DP03/SB02 7/11/2006 5 - 6 ft 06070407	023-DP03/SB03 7/11/2006 8 - 9 ft 06070408	023-DP04/SB01 7/11/2006 0 - 1 ft 06070403	023-DP04/SB02 7/11/2006 4 - 6.5 ft 06070404
Metals, Total	UNITS		•				
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.7	5.2	4	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	150	150	110	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.3 U	0.63	0.55 U	0.57 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	16	26	16	20
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	7.7	16	11

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Poin Date Sampleo Sample Depth Laboratory Numbe		KDHE RSKs (res/ind)	023-DP04/SB22 7/11/2006 4 - 6.5 ft 06070405 Duplicate
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.87
Chromium, Total	mg/kg	210 / 450	390 / 4,000	34
Lead, Total	mg/kg	400 / 800	400 / 1,000	10

Notes:

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

All detections are in **bold** font.

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 applicable / not analyzed

-	•		KDHE RSKs (res/ind)	024-DP01/SB01 7/11/2006 1 - 2 ft 06070388	024-DP01/SB02 7/11/2006 7 - 8 ft 06070389	024-DP01/SB03 7/11/2006 9 - 10 ft 06070390	024-DP01/SB33 7/11/2006 9 - 10 ft 06070391 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	2.4	2.4	3.9	3.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	140	210	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.62 U	0.65 U	0.65 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	12	9.4	15	13
Lead, Total	mg/kg	400 / 800	400 / 1,000	6.4	4.5	6.8	5.8
Mercury, Total	mg/kg	23/310	2 / 20	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	024-DP02/SB01 7/11/2006 1 - 2 ft 06070398	024-DP02/SB02 7/11/2006 7 - 8 ft 06070399	024-DP02/SB03 7/11/2006 10 - 11 ft 06070400	024-DP03/SB01 7/11/2006 0 - 1 ft 06070392
Metals, Total	UNITS			· · · · · ·			
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	2.1	1.7	2	4.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	81	93	160
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.52 U	0.56 U	0.61 U	0.65
Chromium, Total	mg/kg	210 / 450	390 / 4,000	7.9	6.3	6.8	19
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.3	4.4	3.6	10
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	024-DP03/SB02 7/11/2006 7 - 8 ft 06070393	024-DP03/SB03 7/11/2006 11 - 12 ft 06070394	024-DP04/SB01 7/11/2006 1 - 2 ft 06070395	024-DP04/SB02 7/11/2006 7 - 8 ft 06070396
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	2.4	1.1	2.2	2.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	42	108	79
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.57 U	• 0.52 U	0.65 U	0.56 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	9.1	3	94	6.8
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.6	2.4	5.8	4
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.2	0.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Dat San	mple Point: e Sampled: nple Depth: ry Number:		KDHE RSKs (res/ind)	024-DP04/SB03 7/11/2006 11 - 12 ft 06070397
Metals, Total		UNITS			
Arsenic, Total		mg/kg	0.39 / 1.6	11/38	1,2
Barium, Total		mg/kg	5,400 / 67,000	5,500 / 140,000	43
Cadmium, Total		mg/kg	37 / 450	39 / 1,000	0.54 U
Chromium, Total		mg/kg	210 / 450	390 / 4,000	3.6
Lead, Total		mg/kg	400 / 800	400 / 1,000	2.4
Mercury, Total		mg/kg	23/310	2 / 20	_0.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point:	USEPA Region	USEPA MCLs	024-DP01/GW01	024-DP02/GW01	024-DP02/GW01	024-DP03/GW01
	Date Sampled:	9 PRGs		7/11/2006	7/11/2006	7/11/2006	7/11/2006
	Sample Depth:	(tap water)		LIQUID	LIQUID	LIQUID	LIQUID
	Laboratory Number:			06070410	06070414	06070414R	06070411
	-				·	Reanalysis	
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA ·	NA	0.046 J	0.088 J	0.096 J	0.176 J
Barium, Total	mg/L	NA	NA	3.25	8.18 R	8.73	8.38
Cadmium, Total	mg/L	NA	NA	0.004 J	0.006 J	0.011 J	0.02 J
Chromium, Total	mg/L	NA	NA	1.91 J	0.442 J	0.613 J	1.33 J
Lead, Total	mg/L	NA	NA	0.101 J	0.111 J	0.123 J	0.321 J
Metals, Dissolved	UNITS						
Barium, Dissolved	mg/L	2.6	2	0.82	0.13	NA	0.29
Selenium, Dissolved	mg/L	0.18	0.05	0.01 U	0.012 J	NA ·	0.01 U

Notes:

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

All detections are in bold font.

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

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

	Sample Point:	USEPA Region	USEPA MCLs	024-DP03/GW11	024-DP04/GW01
	Date Sampled:	9 PRGs		7/11/2006	7/11/2006
	Sample Depth:			LIQUID	LIQUID
	Laboratory Number:			06070412	06070413
				Duplicate	
Metals, Total	UNITS				
Arsenic, Total	mg/L	NA	NA	0.048 J	0.043 J
Barium, Total	mg/L	NA	NA	1.99	2.88
Cadmium, Total	mg/L	NA	NA	0.003 J	0.007 J
Chromium, Total	mg/L	· NA	NA	1.49 J	0.837 J
Lead, Total	mg/L	NA	NA	0.071 J	0.156 J
Metals, Dissolved	UNITS				
Barium, Dissolved	mg/L	2.6	2	0.24	0.34
Selenium, Dissolved	mg/L	0.18	0.05	0.01 U	0.01 U

Notes:

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

All detections are in bold font.

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

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

### Table 6-1Soil DetectionsMain Post WWTP (FTRI-025)Wastewater SitesWastewater SitesExpanded Site InvestigationFort Riley, Kansas

	•		KDHE RSKs (res/ind)	025-DP01/SB01 7/7/2006 0 - 1 ft 06070254	025-DP01/SB02 7/7/2006 7 - 8 ft 06070255	025-DP01/SB03 7/7/2006 10 - 11 ft 06070256	025-DP02/SB01 7/7/2006 1 - 2 ft 06070241
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	2.6	<b>3.6</b>	2.2	2.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	150	210	150	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	0.62 U	0.62 U	0.53 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	13	10	12
Lead, Total	mg/kg	400 / 800	400 / 1,000	39	7.1	4.9	· 7 .
Mercury, Total	mg/kg	23 / 310	2 / 20	1.6	0.1 U	0.1 U	0.1 U
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	7.3	1.2 U	1.2 U	1.1 U
Notos:							

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

	•		KDHE RSKs (res/ind)	025-DP02/SB02 7/7/2006 6.5 - 7.5 ft 06070242	025-DP02/SB03 7/7/2006 11 - 12 ft 06070243	025-DP03/SB01 7/7/2006 1 - 2 ft 06070244	025-DP03/SB02 7/7/2006 7 - 8 ft 06070245
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39/1.6	11 / 38	7.2	10.	4	<b>3.3</b>
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	230	29	160	240
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	0.51 U	0.63	3.3
Chromium, Total	mg/kg	210/450	390 / 4,000	28	1.4	15	41
Lead, Total	mg/kg	400 / 800	400 / 1,000	15	1.6	9.1	96
Mercury, Total	mg/kg	23/310	2/20	0.1 U	0.1 U	0.2	7.6
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1 U	1.1 U	12 J

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

#### Table 6-1Soil DetectionsMain Post WWTP (FTRI-025)Wastewater SitesWastewater SitesExpanded Site InvestigationFort Riley, Kansas

Date Sampled: Sample Depth:	PRGs (res/ind)	KDHE RSKs (res/ind)	025-DP03/SB02 7/7/2006 7 - 8 ft 06070245R Reanalysis	025-DP03/SB03 7/7/2006 8.5 - 9.5 ft 06070246	025-DP03/SB03 7/7/2006 8.5 - 9.5 ft 06070246R Reanalysis	025-DP04/SB01 7/7/2006 1 - 2 ft 06070247
UNITS						
mg/kg	0.39 / 1.6	11/38	NA	5.1	NA	3.4
mg/kg	5,400 / 67,000	5,500 / 140,000	NA	290	NA	100
mg/kg	37 / 450	39 / 1,000	NA	4.4	NA	0.55 U
• •	210/450	390 / 4,000	NA	47	NA	9.7
	400 / 800	400 / 1,000	NA	120	NA	8.1
•••	23/310	2/20	NA	5.5	NA	0.1 U
mg/kg	390 / 5,100	390 / 10,000	11 R	38 J	28 R	1.1 U
	Date Sampled: Sample Depth: Laboratory Number: UNITS mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	Date Sampled: Sample Depth: Laboratory Number:         PRGs (res/ind)           UNITS         UNITS           mg/kg         0.39 / 1.6           mg/kg         5,400 / 67,000           mg/kg         37 / 450           mg/kg         210 / 450           mg/kg         400 / 800           mg/kg         23 / 310	Date Sampled: Sample Depth: Laboratory Number:         PRGs (res/ind)         (res/ind)           UNITS	Date Sampled:         PRGs (res/ind)         (res/ind)         7/7/2006           Sample Depth:         PRGs (res/ind)         (res/ind)         7 - 8 ft           Laboratory Number:         UNITS         Reanalysis           UNITS         mg/kg         0.39 / 1.6         11 / 38         NA           mg/kg         0.39 / 1.6         39 / 1.000         NA           mg/kg         37 / 450         39 / 1.000         NA           mg/kg         37 / 450         390 / 4.000         NA           mg/kg         210 / 450         390 / 4.000         NA           mg/kg         400 / 800         400 / 1.000         NA	Date Sampled:         PRGs (res/ind)         INDIC Hotes         7/7/2006         7/7/2006           Sample Depth:         PRGs (res/ind)         (res/ind)         7/7/2006         7/7/2006         8.5 - 9.5 ft           Laboratory Number:         UNITS         Reanalysis         NA         5.1           mg/kg         0.39 / 1.6         11 / 38         NA         290           mg/kg         5,400 / 67,000         5,500 / 140,000         NA         290           mg/kg         37 / 450         39 / 1,000         NA         4.4           mg/kg         210 / 450         390 / 4,000         NA         47           mg/kg         400 / 800         400 / 1,000         NA         5.5           mg/kg         23 / 310         2 / 20         NA         5.5	Date Sampled: Sample Depth: Laboratory Number:         PRGs (res/ind)         Iteration of (res/ind)         T/T/2006         T/T/2006

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

## Table 6-1Soil DetectionsMain Post WWTP (FTRI-025)Wastewater SitesWastewater SitesExpanded Site InvestigationFort Riley, Kansas

			KDHE RSKs (res/ind)	025-DP04/SB02 7/7/2006 7 - 8 ft 06070248	025-DP04/SB03 7/7/2006 8 - 12 ft 06070249	025-DP04/SB33 7/7/2006 8 - 12 ft 06070250 Duplicate	025-DP05/SB01 7/7/2006 1 - 2 ft 06070251
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38 ·	7.9	1.2	1.5	2.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	340	• 43	61	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.6	0.56 U	0.54 U	0.58
Chromium, Total	mg/kg	210 / 450	390 / 4,000	31	3.9	4.3	12
Lead, Total	mg/kg	400 / 800	400 / 1,000	15	2.7	2.7	11
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.1 U	0.2
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.4 U	1.1 U	1.1 U	1.1 U

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

	•		KDHE RSKs (res/ind)	025-DP05/SB02 7/7/2006 6 - 7 ft 06070252	025-DP05/SB03 7/7/2006 11 - 12 ft 06070253
Metals, Total	UNITS				
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	8.8	1.1
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220	39
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.4	0.52 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	29	2
Lead, Total	mg/kg	400 / 800	400 / 1,000	. 14	2
Mercury, Total	mg/kg	23/310	2 / 20	0.1 U	0.1 U
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1 U
Notes:					

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

#### Table 6-2Groundwater DetectionsMain Post WWTP (FTRI-025)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	025-DP01/GW01 7/7/2006 LIQUID 06070261	025-DP02/GW01 7/7/2006 LIQUID 06070257	025-DP03/GW01 7/7/2006 LIQUID 06070258	025-DP04/GW01 7/7/2006 LIQUID 06070259
Metals, Total	UNITS		· · ·				
Arsenic, Total	mg/L	NA	NA	0.339	0.212	0.327	0.22 R
Barium, Total	mg/L	NA	NA	9.68	5.86	6.28	3.04
Cadmium, Total	mg/L	NA	NA	0.04 J	0.021 J	0.033 J	0.015 J
Chromium, Total	mg/L	NA	NA	0.887 J	0.922 J	0.961 J	0.629 J
Lead, Total	mg/L	NA.	NA	0.658	0.41	0.638	0.397
Mercury, Total	mg/L	NA	NA	0.0008	0.0004	0.0004	0.0003
Selenium, Total	mg/L	NA	NA	0.023	0.163	0.262	0.042 R
Metals, Dissolved	UNITS						
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U	0.01 U	0.01 U	0.027
Barium, Dissolved	mg/L	2.6	2	0.17	0.25	0.51	0.81
Cadmium, Dissolved	mg/L	0.18	0.005	0.003 U	0.003 U	0.003	0.004
Chromium, Dissolved	mg/L	55 / 0.11*	0.1	0.005 U	0.005 U	0.005 U	0.016
Lead, Dissolved	mg/L	NA	0.015**	0.005 U	0.005 U	0.005 U	0.018

Notes:

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

\* Value is for trivalent chromium / hexavalent chromium.

\*\* Value is an action level, not an MCL.

All detections are in bold font.

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

Freininary Hemediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum

Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

## Table 6-2Groundwater DetectionsMain Post WWTP (FTRI-025)Wastewater SitesExpanded Site InvestigationFort Riley, Kansas

Sample Point:	USEPA Region	USEPA MCLs/	025-DP04/GW01	025-DP04/GW11	025-DP05/GW01
		Action Level	7/7/2006	7/7/2006	7/7/2006
Sample Depth:	(tap water)		LIQUID	LIQUID	LIQUID
Laboratory Number:			06070259R	06070260	06070262
				Duplicate	
UNITS					
mg/L	NA	NA	0.231	0.441	0.157
mg/L	NA	NA	NA	6.94	10.5
mg/L	NA	NA	0.018 J	0.024 J	0.025 J
mg/L	NA	NA	0.928 J	1.08 J	1.29 J
mg/L	NA	NA	NA	0.82	0.456
mg/L	NA	NA	NA	0.0004	0.0002 U
mg/L	NA	NA	0.074	0.062	0.037
UNITS					
mg/L	0.000045	0.01	NA	0.018	0.01 U
mg/L	2.6	2	NA	0.6	0.53
mg/L	0.18	0.005	NA	0.003 U	0.003 U
mg/L	55 / 0.11*	0.1	NA	0.021	0.005 U
-	NA	0.015**	NA	0.014	0.005 U
	Date Sampled: Sample Depth: Laboratory Number: UNITS mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	Sample Depth: Laboratory Number:(tap water)UNITSmg/LNAmg/LNAmg/LNAmg/LNAmg/LNAmg/LNAmg/LNAmg/LNAmg/LNAmg/L0.000045mg/L0.18mg/L55 / 0.11*	Date Sampled: Sample Depth: Laboratory Number:9 PRGs (tap water)Action LevelUNITS(tap water)	Date Sampled: Sample Depth: Laboratory Number:9 PRGs (tap water)Action Level7/7/2006 LIQUID 06070259RUNITS	Date Sampled:         9 PRGs (tap water)         Action Level         7/7/2006 LIQUID         7/7/2006 LIQUID           Laboratory Number:         (tap water)         06070259R         06070260 Duplicate           UNITS

Notes:

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

\* Value is for trivalent chromium / hexavalent chromium.

\*\* Value is an action level, not an MCL.

All detections are in bold font.

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

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

	•		KDHE RSKs (res/ind)	026-DP01/SB01 7/19/2006 1 - 2 ft 06071277	026-DP01/SB02 7/19/2006 7 - 8 ft 06071278	026-DP01/SB03 7/19/2006 11 - 12 ft 06071279	026-DP02/SB01 7/19/2006 1 - 2 ft 06071274
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	<b>5.1</b>	4.6	8	4.6
Barium, Total	· mg/kg	5,400 / 67,000	5,500 / 140,000	150	190	99	130
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.1 U	1.1	2.1	0.79
Chromium, Total	mg/kg	210 / 450	390 / 4,000	21	23	20	18
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	15	13	11

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Point: Date Sampled: Sample Depth: Laboratory Number:		KDHE RSKs (res/ind)	026-DP02/SB02 7/19/2006 7 - 8 ft 06071275	026-DP02/SB03 7/19/2006 10 - 11 ft 06071276	026-DP03/SB01 7/19/2006 1 - 2 ft 06071271	026-DP03/SB02 7/19/2006 5 - 6 ft 06071272
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11/38	4.8	5.2	6.3	<b>7.1</b>
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	170	130	170	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.95	1.2	0.93	1.2 U
Chromium, Total	mg/kg	210/450	390 / 4,000	25	27	20	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	9.3	11	13

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	•		KDHE RSKs (res/ind)	026-DP03/SB03 7/19/2006 11 - 12 ft 06071273	026-DP04/SB01 7/19/2006 1 - 2 ft 06071267	026-DP04/SB02 7/19/2006 7 - 8 ft 06071268	026-DP04/SB03 7/19/2006 9 - 11 ft 06071269
Metais, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	<b>5.8</b>	7.2	5.1	2.5 U
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	170	130	110
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.98	1.4	1	1.3 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	20	30	24	23
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	13	10	2.2

Notes:

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

All detections are in bold font.

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 applicable / not analyzed

	Sample Poin Date Sampleo Sample Deptr Laboratory Numbe	1:	KDHE RSKs (res/ind)	026-DP04/SB33 7/19/2006 9 - 11 ft 06071270 Duplicate
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	71
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.96
Chromium, Total	mg/kg	210 / 450	390 / 4,000	· 20
Lead, Total	mg/kg	400 / 800	400 / 1,000	1.5

Notes:

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

All detections are in bold font.

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

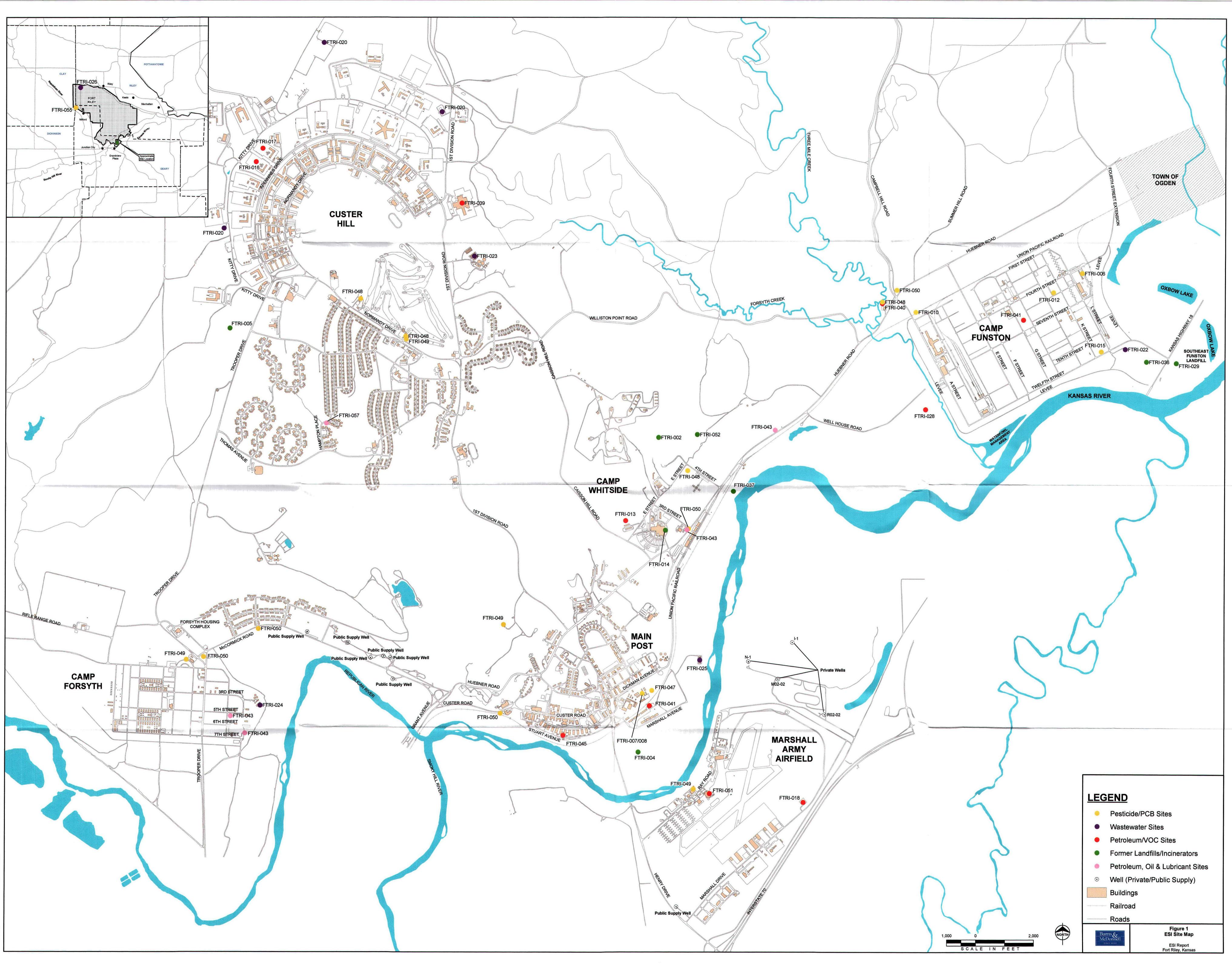
NA - not applicable / not analyzed

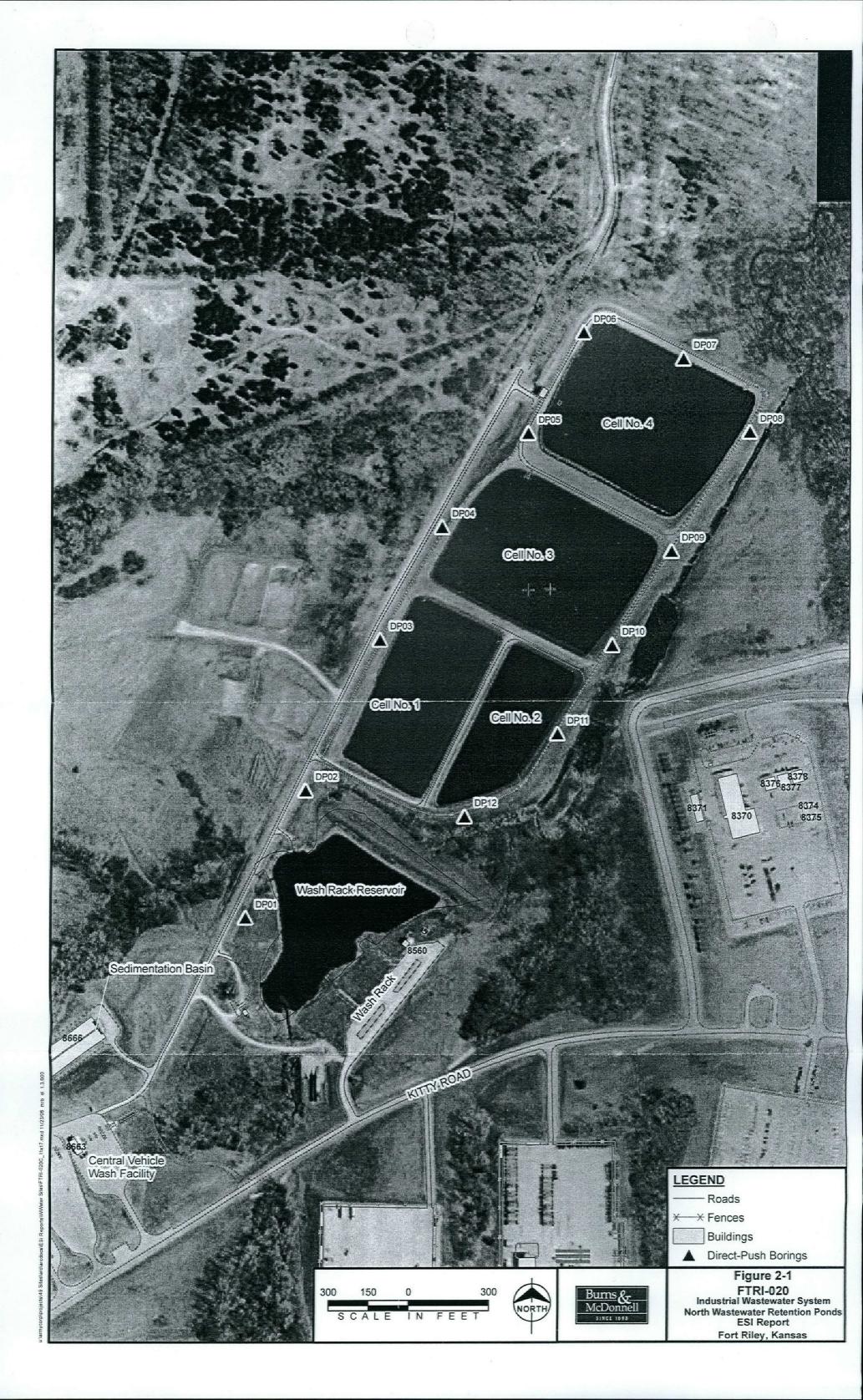
· ·

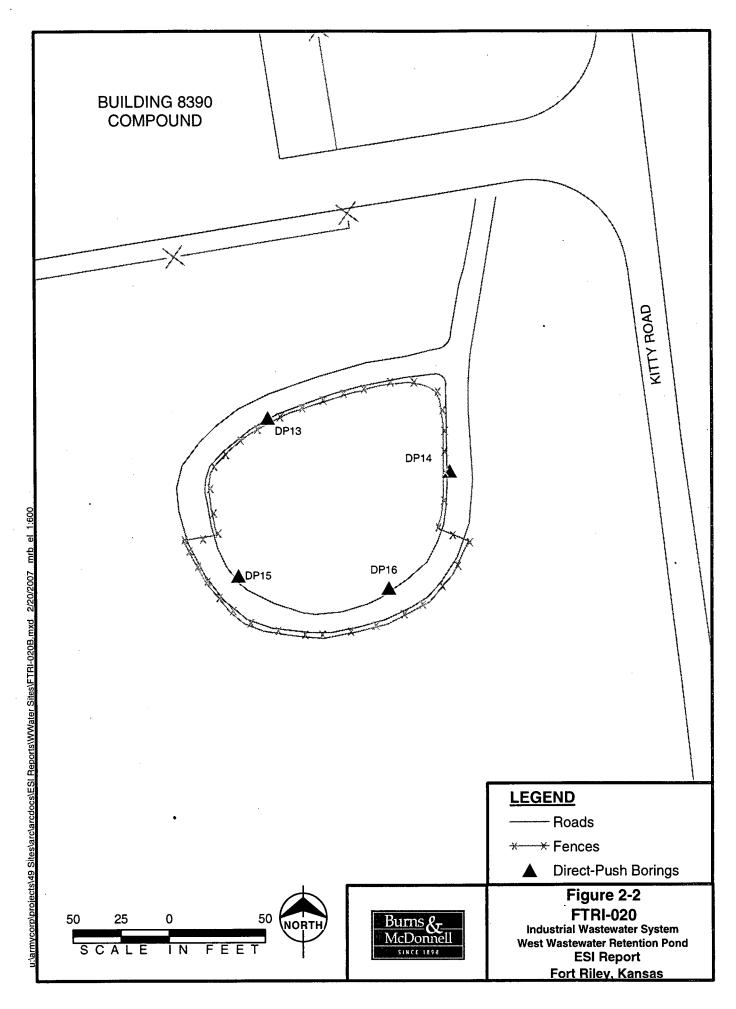
. . .

Figures

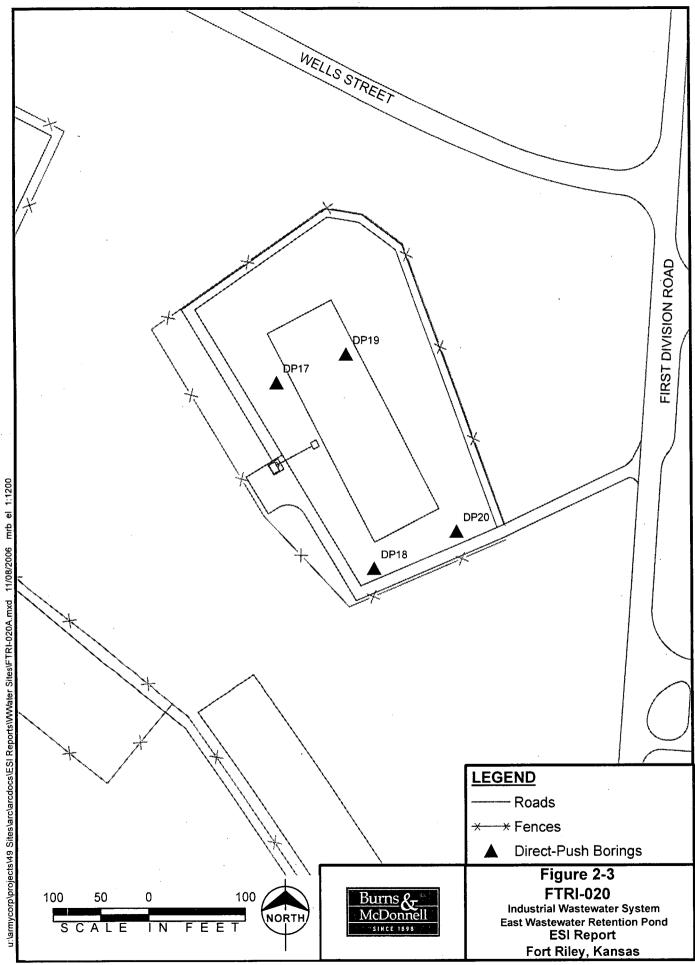
l

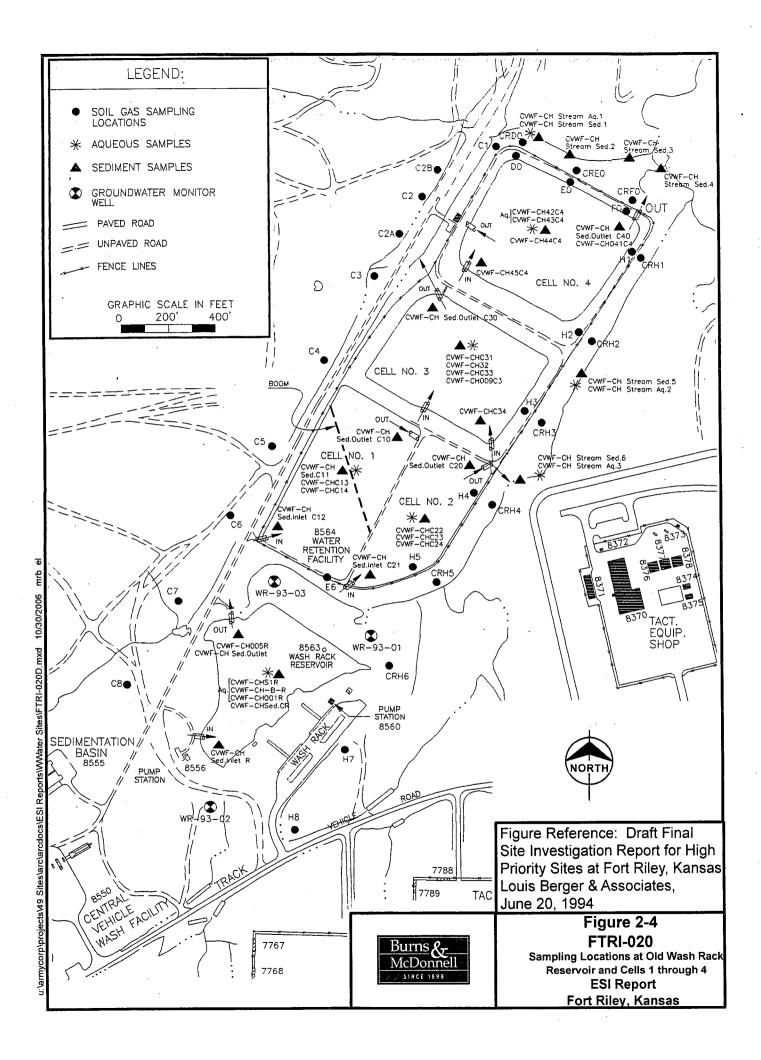


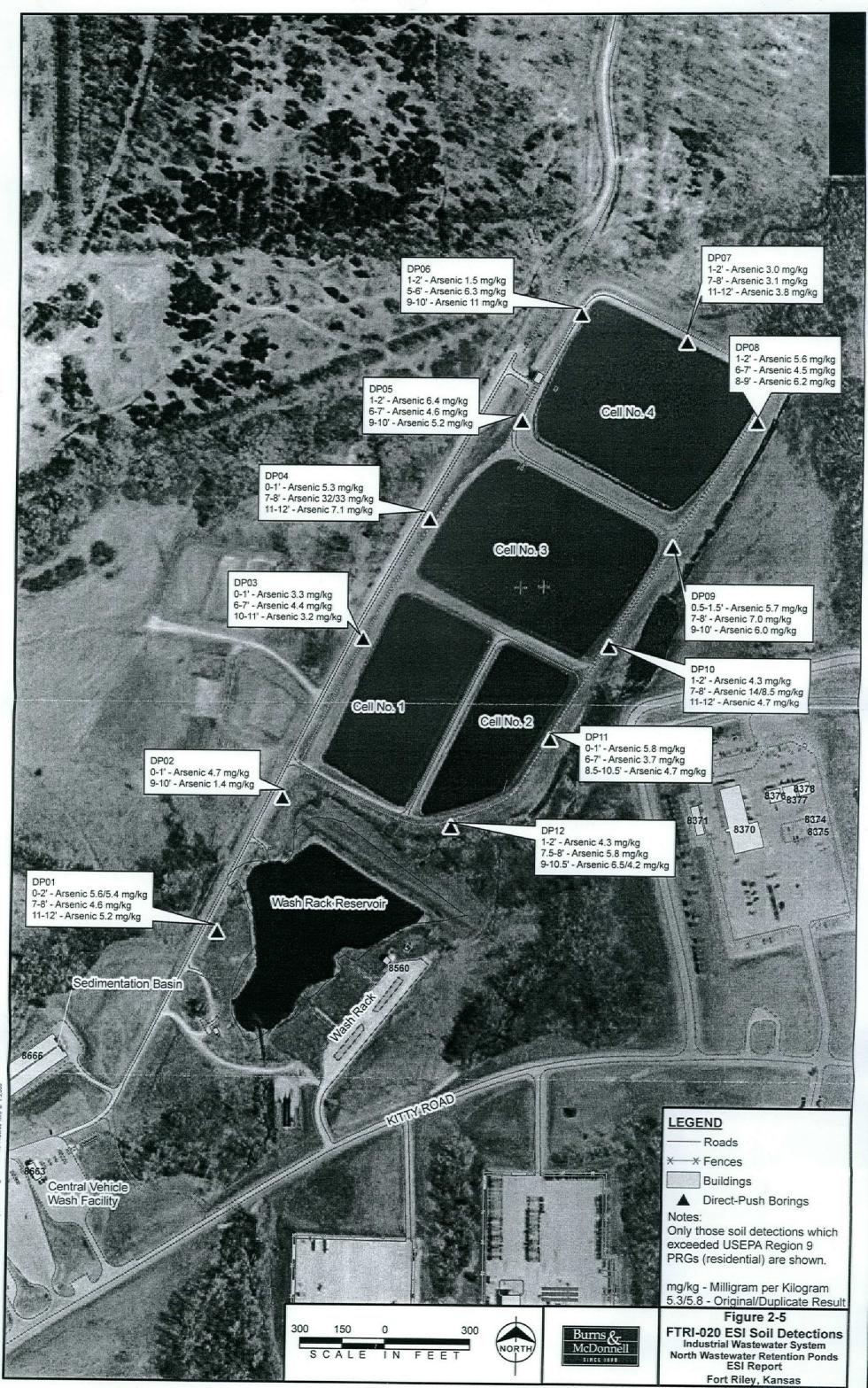


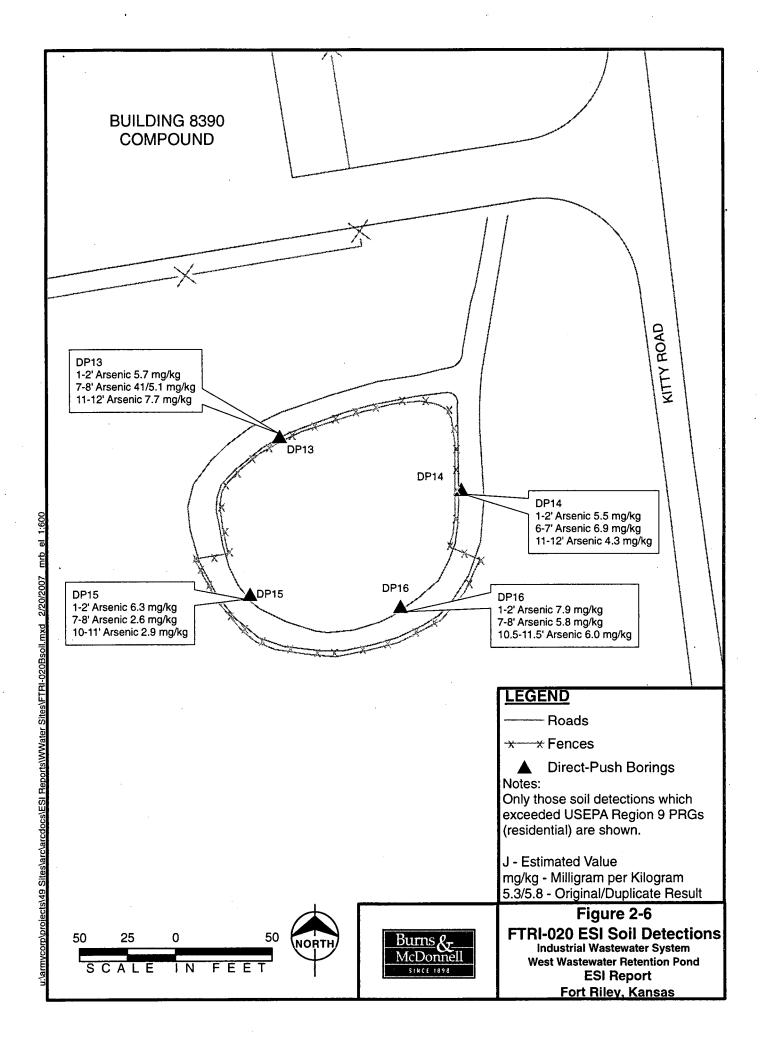


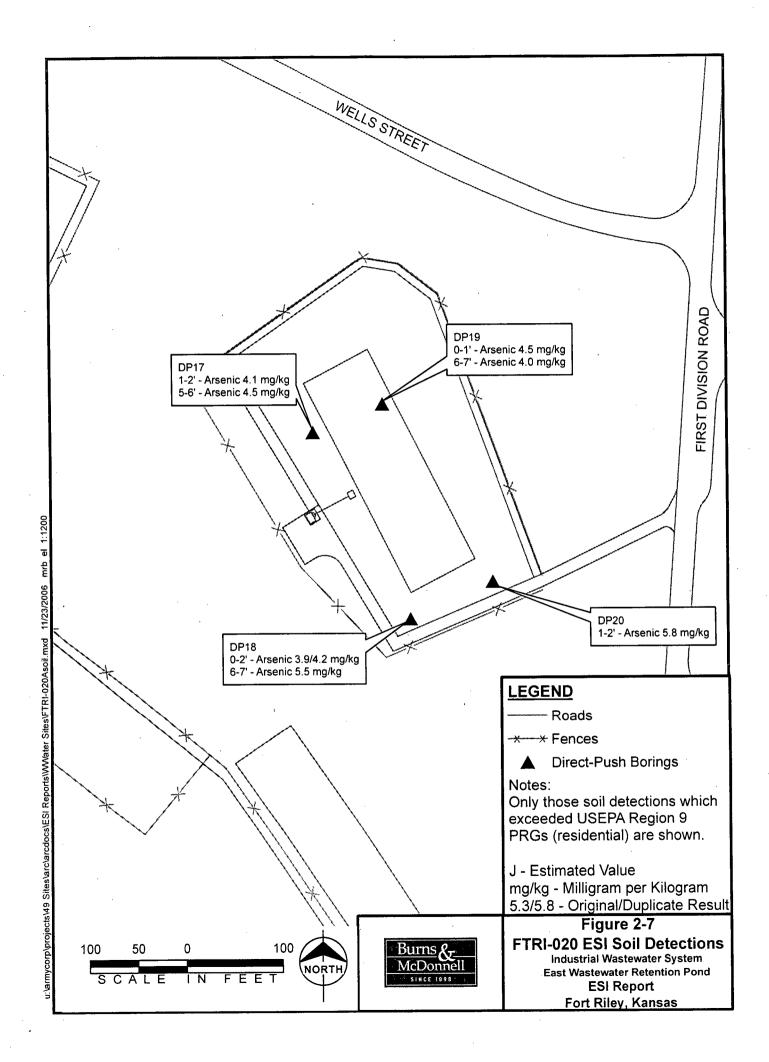
ſ





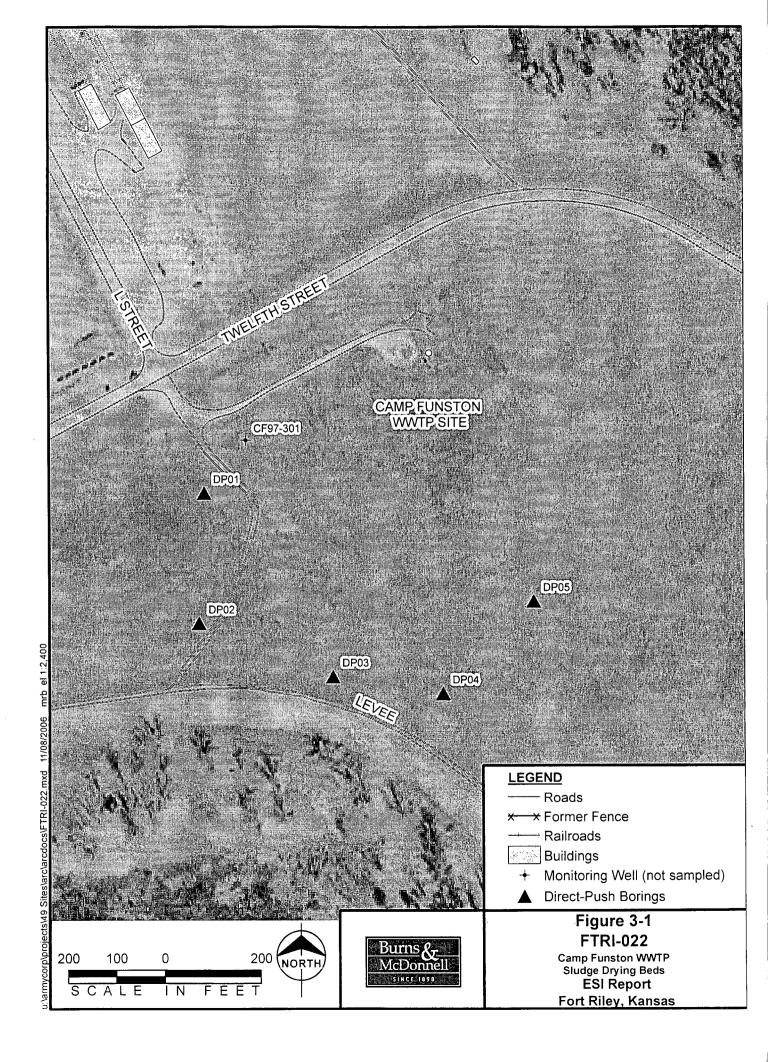


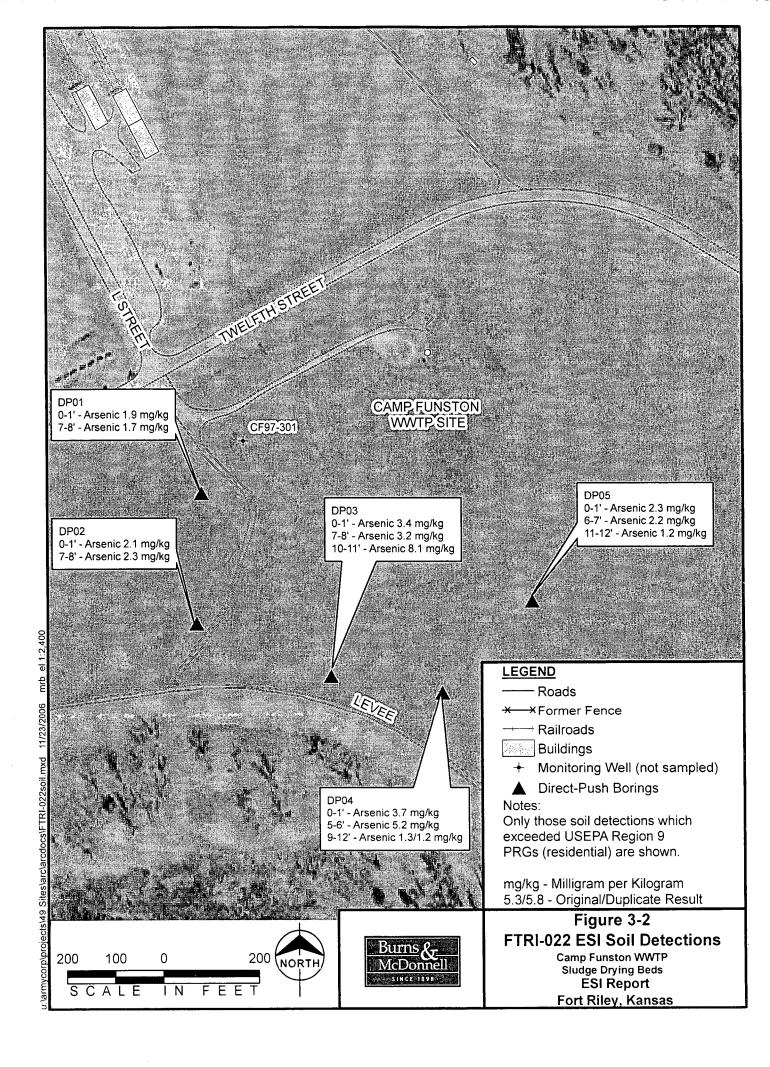


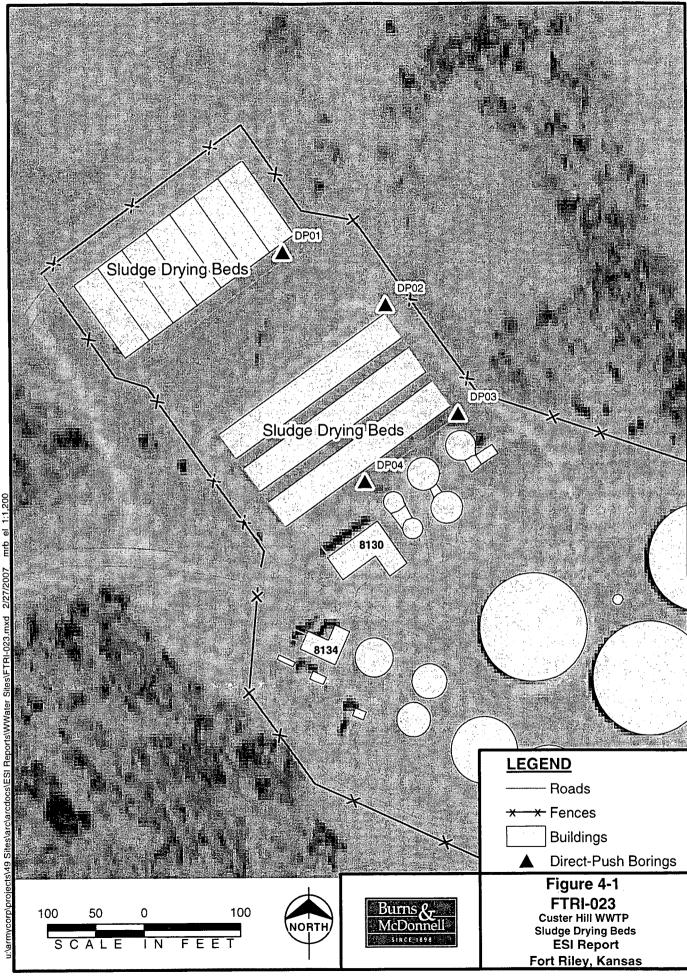


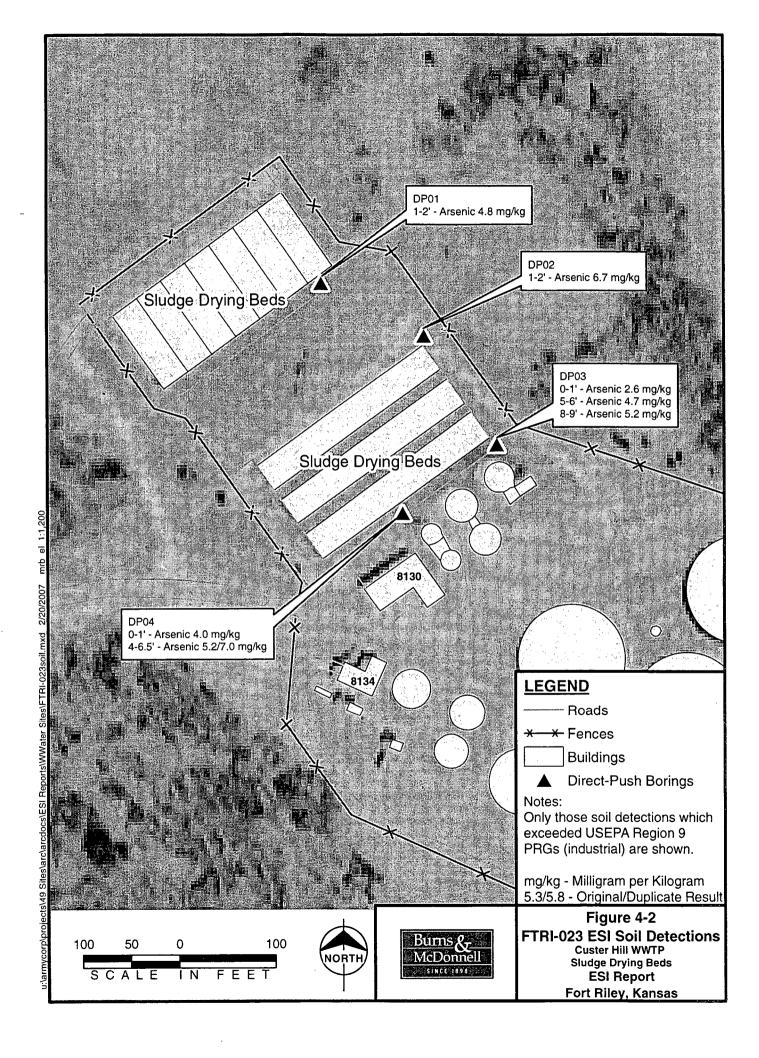


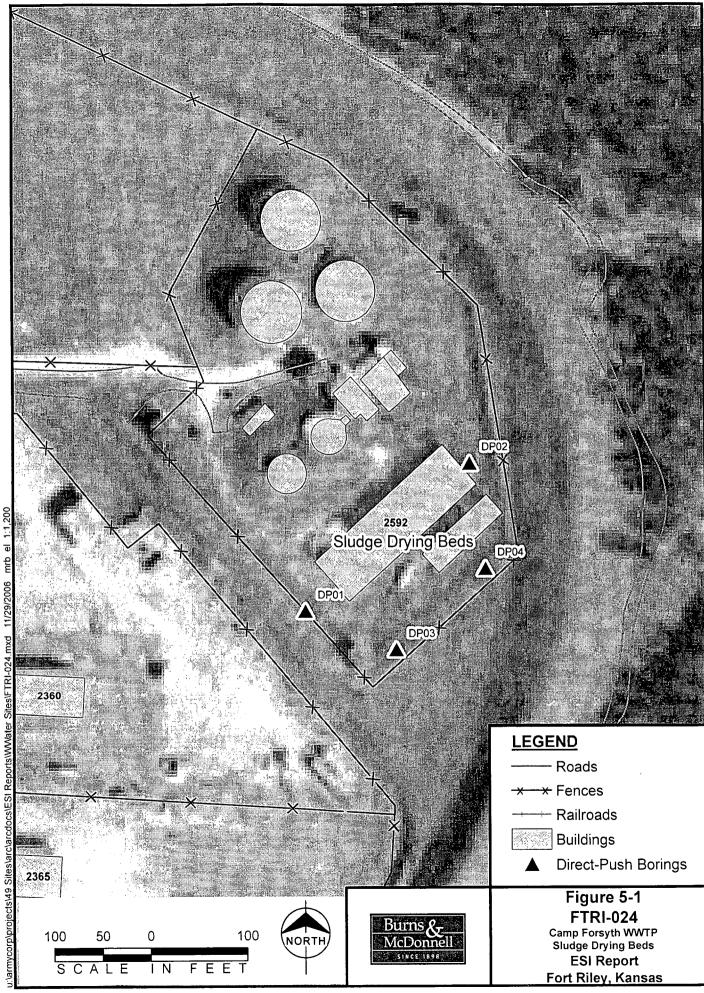
1:3.600 mrb el 11/23/06

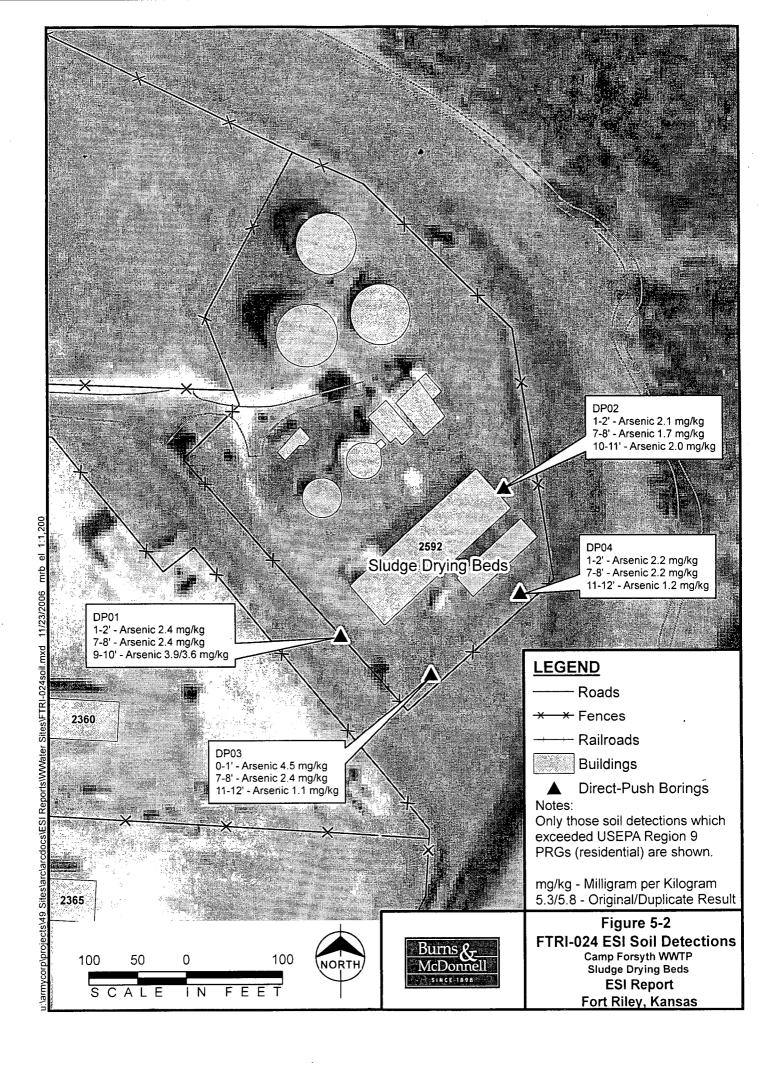


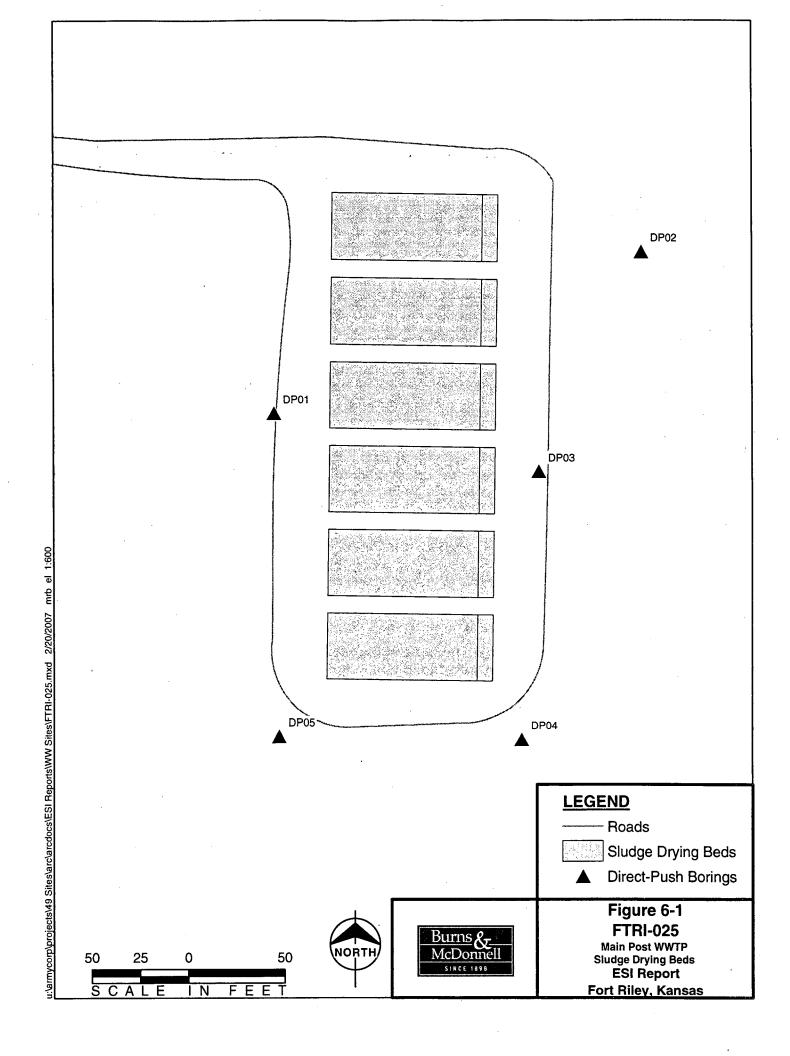


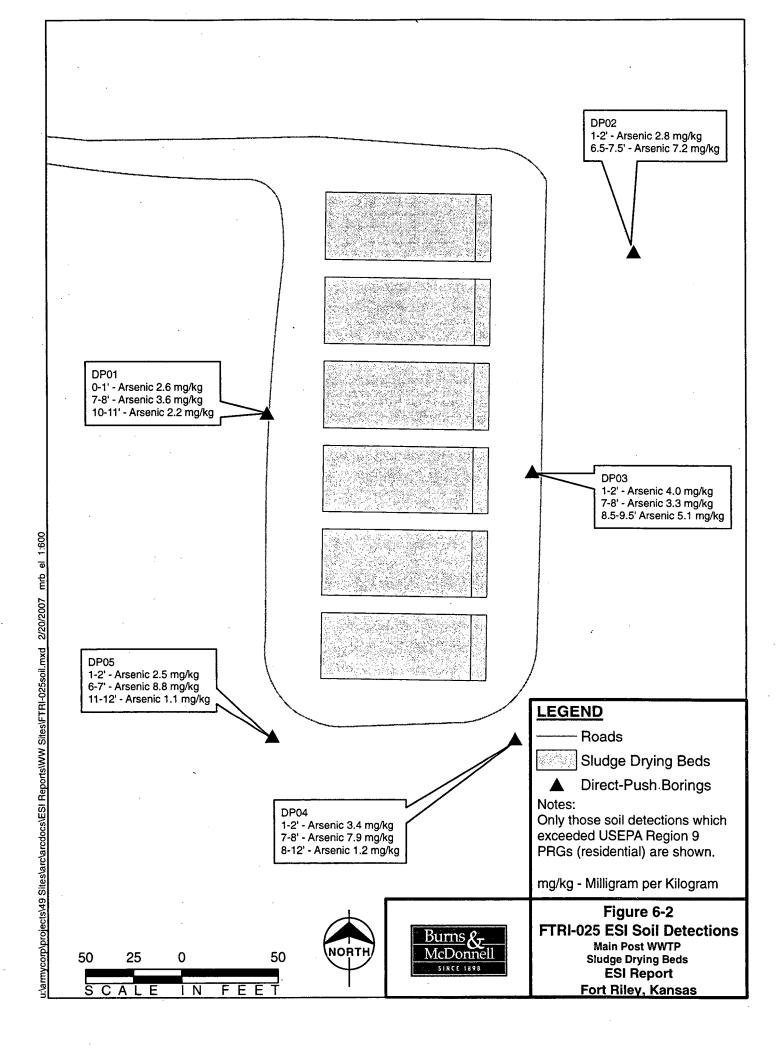


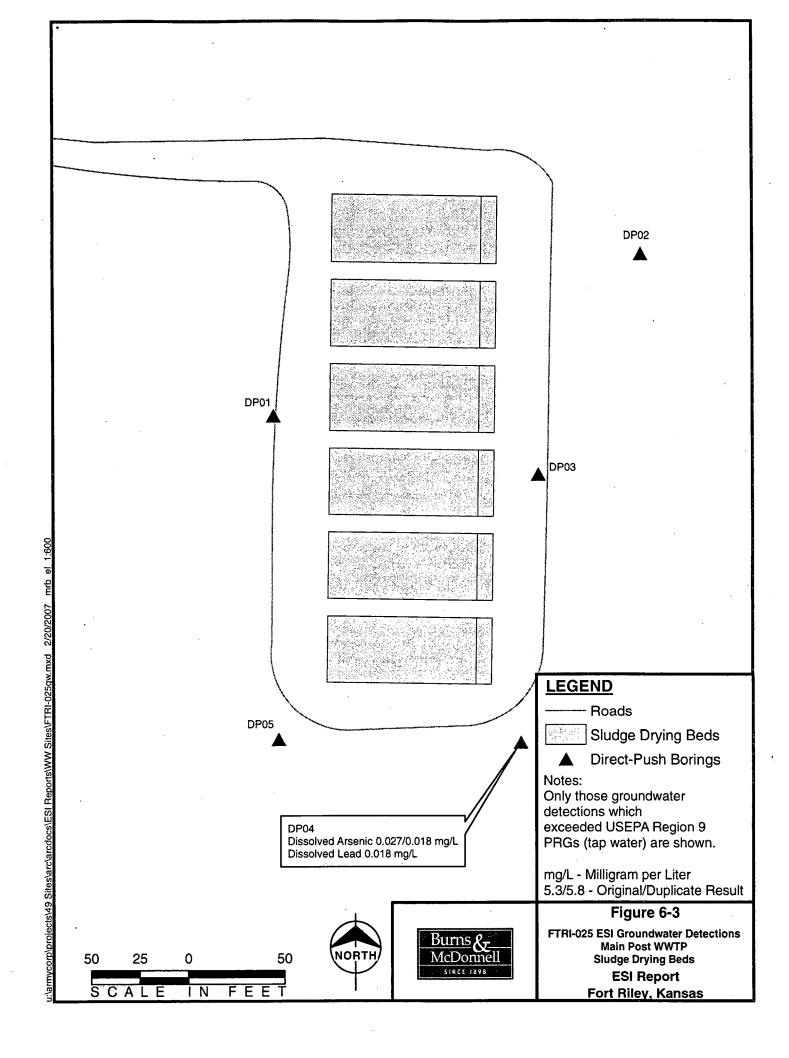


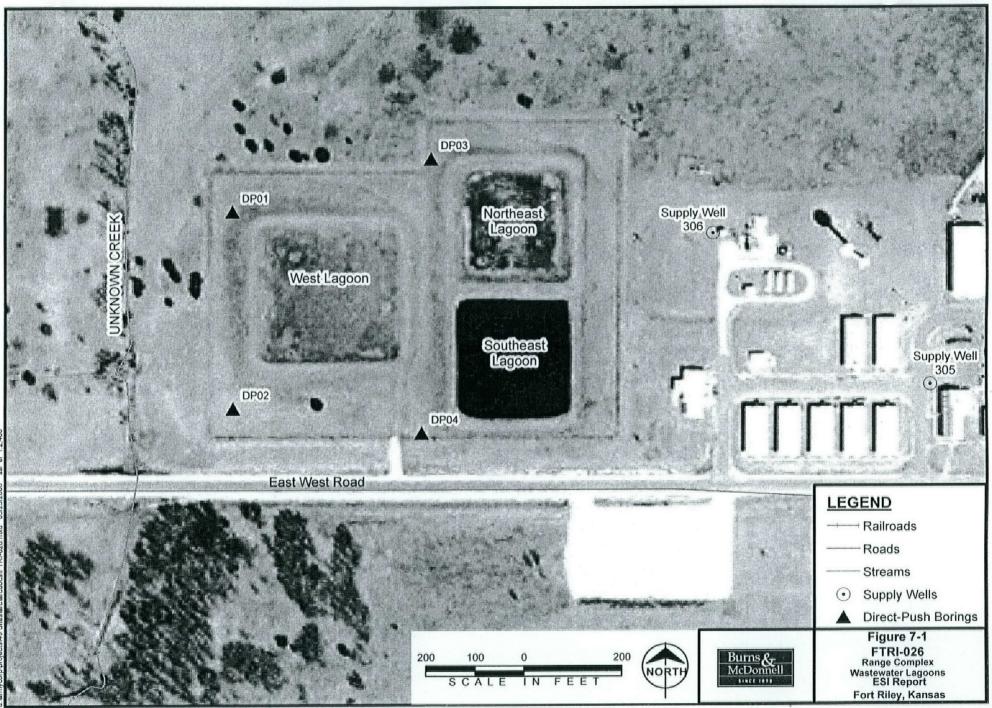


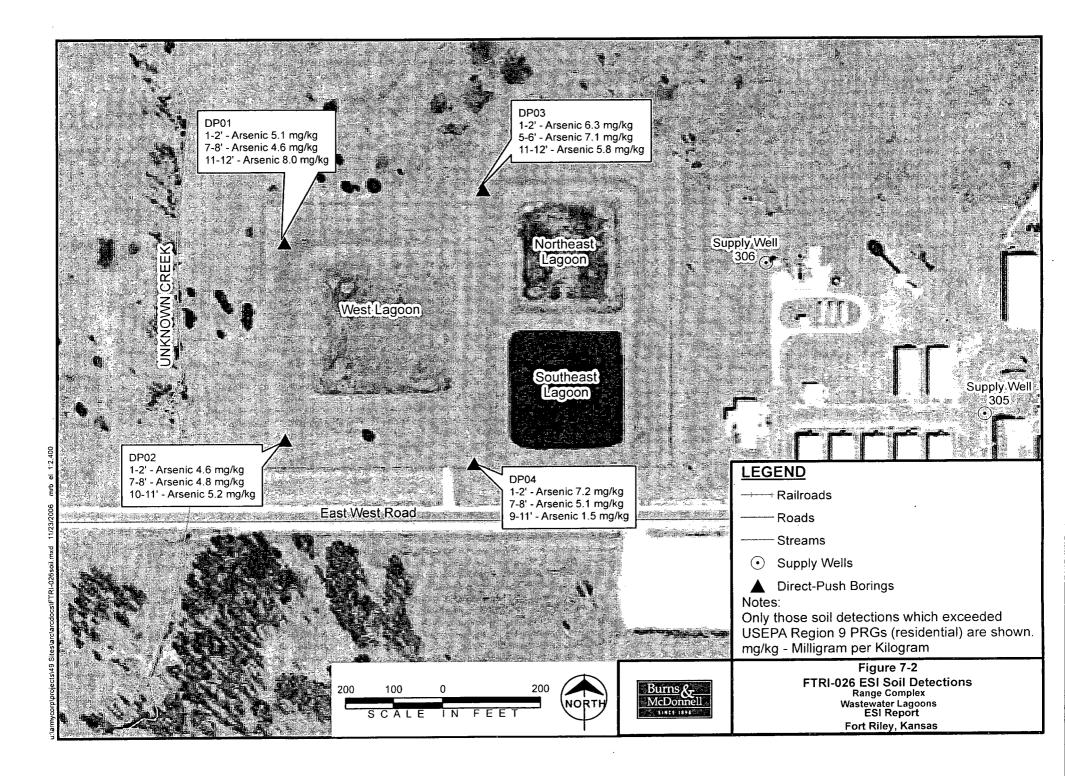










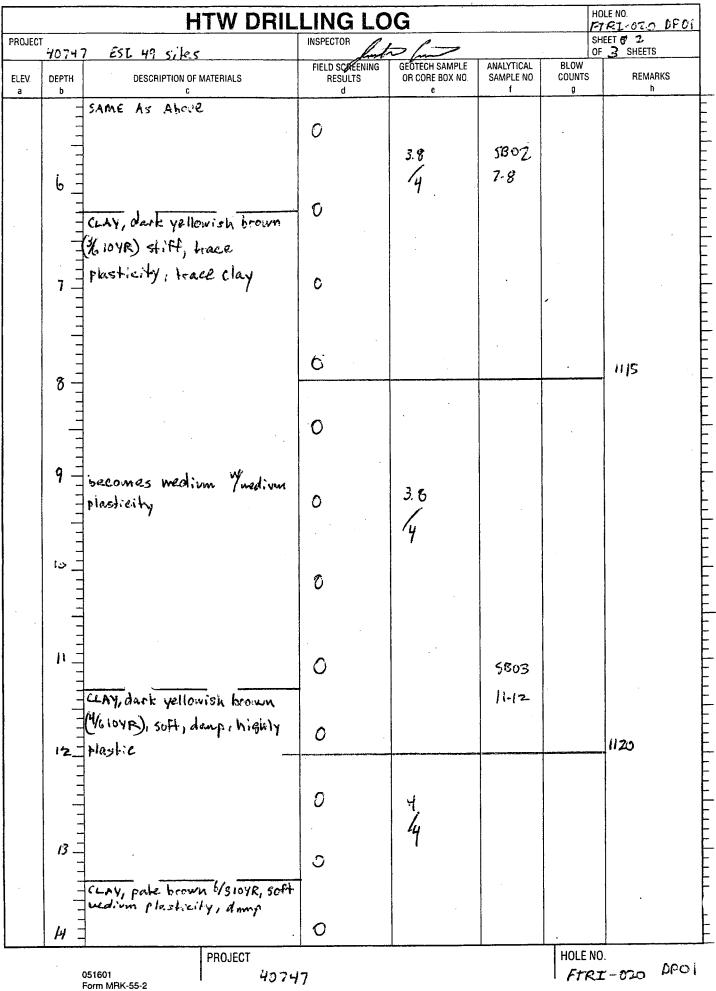


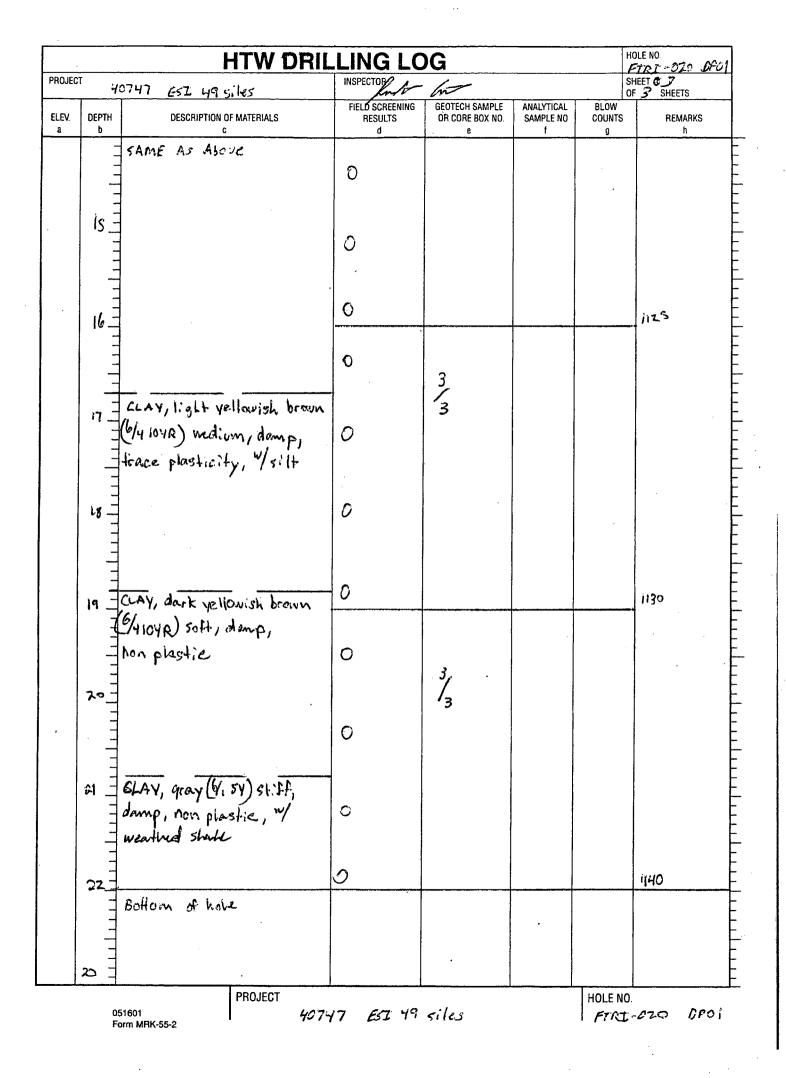
## Appendix A Boring Logs

Boring Logs Industrial Wastewater System Custer Hill (FTRI-020)

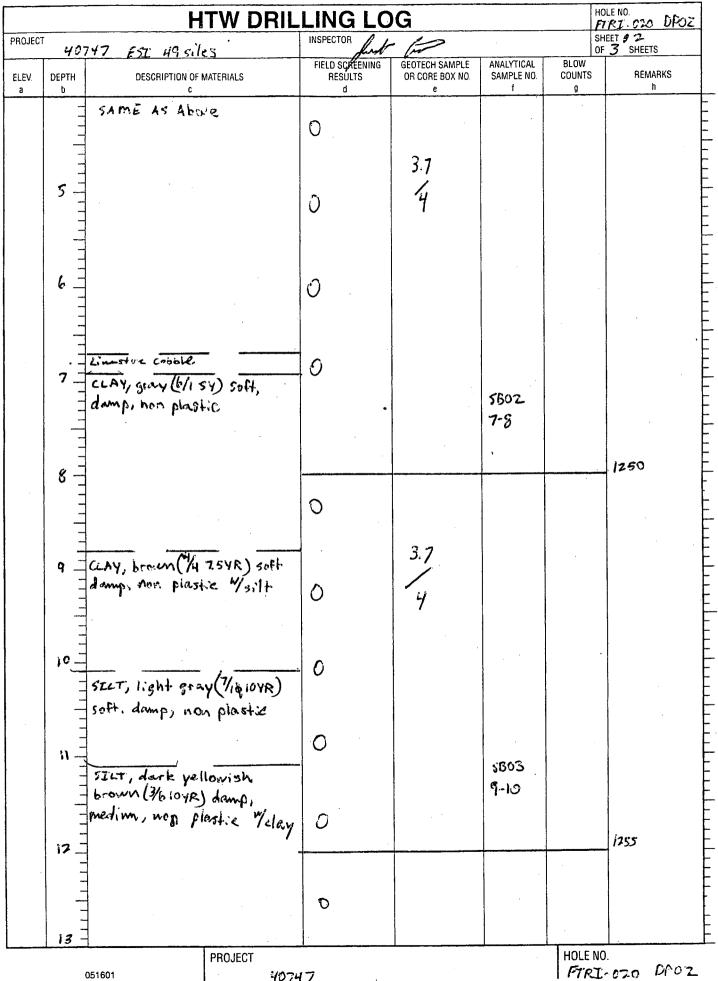
			HTW		ING	10	G	· · · ·			HOLE	
											FIRI SHEET	-020 DPU
COMPA	NY NAME	d Mellie	العمد	2.	DRILUNG	SUBCONTI	FACTOR	5			OF 3	SHEETS
PROJE	СТ					4. LOCAT	ION				•	
		<u>ESI 49</u>	siles			Fre	nd Ril	<u>l.y</u>				
NAME	of Driller	Sec. 10	Nerhoft			1			TION OF DRILL			
SIZES /	AND TYPES OF DRI		enpine Sta	5		8 HOLE	LOCATION	-1-0.	TECH INSP	<u> </u>		
	MPLING EQUIPMEN		MARTOCOTE				NA					
						9 SURFA	CE ELEVATION	N				
						10 0475	NA STARTED		T	11 DATE COM		
						IU. DAIL	7/14/	06		7/14/		
2. OVER	BURDEN THICKNES					15 DEPT	H GROUNDWA		COUNTERED	· · · · · · · · · · · · · · · · · · ·		
		NA	·				NA					
<ol> <li>DEPTI</li> </ol>	h drilled into RC	N A				16 DEPT	H TO WATER . NA	and el	APSED TIME AFTE	K DRILLING CO	MPLEIED	
4 TOTAL	DEPTH OF HOLE		•			17. OTHE	R WATER LEV	EL ME/	ASUREMENTS (SPE	ECIFY)		
		22	the second s				<u></u> A					
8 GEOT	ECHNICAL SAMPLE	S	DISTURBED		ISTURBED	19	TOTAL NUM	BER OF	CORE BOXES			
O SAMP	U LES FOR CHEMICA	ANAL VSIS	VOC				(SPECIFY)	01	HER (SPECIFY)	OTHER (S	PECIFY	21. TOTAL CORE
	3		- 3					†			,	RECOVERY
								-				%
2. Dispo	SITION OF HOLE		BACKFILLED			OTHER	(SPECIFY)	23. 8	SIGNATURE OF INS			
	NA		Bentonite	NA		N.	A		an in			
ELEV	DEPTH	DES	CRIPTION OF MATERIALS	· . ·		CREENING SULTS d	GEOTECH S/ OR CORE BC e		ANALYTICAL SAMPLE NO f	BLOW COUNTS g	F	REMARKS h
	- 61	VISU VA.	dark Gravist	brown								
	7/3/2	1. 1 1010) ra	dark grayisi ft, damp, tr		0				60.01			F
	_ <b>−</b> <sup>+</sup> ,	-~ 1NJ SC	it, aamp, te	ar ec					560			· E
	3"	acticity.					5.1		0-2			Ē
							1				1	E
					0		4 .				Ì	F
												F
												F
												. –
	12				0							Ē
		A. 1.										E
		MY, DERU	un (4310yr), s linn plasticil	847947								E
		mp, wea	inn plasticit	7								Ę
	3	wer silt										F
	*				0		ļ				ļ	. F
	=											F
												F
	1				0							F
	4 <u>-</u>										\$ 1110	F
											]	E
	]											E
					0							E
									1			F
	5 -				1		•		1 1		1	

•





COMPANY NUME         Dr. MAS. + Mac Buscoveli         2         Declaration         Setter 1         OPT. 3         Setter 1           PROJECT         H0747         EST. 40         Sites 1         Setter 1         OPT. 3         Setter 1           INVECT         H0747         EST. 40         Sites 1         Setter 1         Setter 1         Setter 1           INVECT         H0747         EST. 40         Sites 1         Setter 1         Setter 1         Setter 1           INVECT         H0747         EST. 40         Sites 1         Setter 1         Setter 1         Setter 1           INVECT         H0747         EST. 40         Sites 1         Setter 1         Setter 1         Setter 1         Setter 1           Setter 1         Setter				HTW I	DRILLI	ING	LO	G				HOLE	NO [-020]	OFO
РЕССЕТ         410747         EST. 40 sites         4 100000           INME OF GRULER         EST. 40 sites         FARMER OF GRULER         EST. 40 sites         FARMER OF GRULER           SEES NO THES OF GRULED         Est Marked Law (10 method for grule (10	COMPAN							ACTOR		•		SHEE	Γ 1	
Index of SPLICE     Index of SPLICE       Index of SPLICE       Index of SPLICE       Sign of TYPES of SPLICE       Index of SPLICE       Sign of TYPES of SPLICE       Sign of TYPES of SPLICE       ADA       Index of SPLICE			Burns 4	Mebonneli			4 LOCAT		2			OF	SHEETS	
SEE: NO TYPES OF DRUME         Crice for Archaff         Crice for archaff         Crice for archaff           SEE: NO TYPES OF DRUME         Barbardine Eduration         Barbardine Eduration         MA           10: SMARTINE EDURATION         Barbardine Eduration         MA           10: DATE SMARTINE EDURATION         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION OF MOLE         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION OF MOLE         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION OF MOLE         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION OF MOLE         11: DATE COMPLETED         MA           10: DATE SMARTINE EDURATION OF MOLE         11: TOTAL DEPON OF MOLE         11: TOTAL DEPON OF MOLE         MA           10: DERION OF MOLE         10: DATE SMARTINE EDURATION OF MOLE         11: TOTAL DEPON OF MOLE         11: TOTAL DEPON OF MOLE         MA           10: DERION OF MOLE         10: DATE SMARTINE EDURATION OF MOLE         10: TOTAL DEPON OF MOLE	PHODEO	·	40747	ESI 49 sites	<u>.</u>			Fort						
ESEX MOL CONTROL     A       MID SAMPLING EQUIPMENT     IS EXPLOSE ELEVATION MA     A       MID SAMPLING EQUIPMENT     IS EXPLOSE ELEVATION MA     IS EXPLOSE ELEVATION MA       ID DATE STRIPE     II DATE COMPLETED 71/11/6 E       ID DATE STRIPE     II DATE COMPLETED 71/11/6 E       ID DATE STRIPE     II DATE COMPLETED 71/11/6 E       ID DATE STRIPE     IS EXPLOSE THE AD ELANSED THE ATER DELLING COMPLETED MA       ID DATE STRIPE     ID DATE STRIPE       ID DATE STRIPE </td <td>NAME O</td> <td>f Driller</td> <td></td> <td>the markaff</td> <td></td> <td></td> <td>6 MANUF</td> <td></td> <td></td> <td></td> <td><b>.</b> .</td> <td></td> <td></td> <td></td>	NAME O	f Driller		the markaff			6 MANUF				<b>.</b> .			
AND SAMPLING EQUIPMENT       41     Industrial Constraints     11     DATE CONFILE     11     DATE CONFILE       2     OVERBURDEN THOUSES     11     DATE CONFILE     11     DATE CONFILE       3     OPPH ORILLED INTO ROCK     MA     15     DEPTH ORIOLED THE AND ELAPSED THE ATER DALLING COMPLETED       3     OPPH ORILLED INTO ROCK     MA     16     DEPTH ORILLED INTO ROCK     MA       4     TOTAL IDEPTH OF HOLE     17     OTHER MITER LEVEL LESSENGENTS (SPECIFY)     MA       4     TOTAL IDEPTH OF HOLE     17     OTHER MITER LEVEL LESSENGENTS (SPECIFY)       3     OP     DESTURBED     UNDETUBED     19     TOTAL IDEPTH OF HOLE       3     OP     DESTURBED     UNDETUBED     19     TOTAL IDEPTH OF HOLE       3     OP     3     OP     OTHER INFECTION     OTHER INFECTION       3     OP     3     OP     OTHER INFECTION     OTHER INFECTION       3     OP     0     MA     MA     MA     MA       4     ELEV     DESTURBED     UNDETUBED     23     SIGNATURE OF INSERTION OF MATERIALS       4     DESTURBED     UNDETUBED     OTHER INFECTION     MA     MA       4     DESTURBED     UNDETUBED     DESTURBED     23     SIGNATURE OF INSERTION <td>SIZES A</td> <td>ND TYPES O</td> <td></td> <td>and the second second</td> <td></td> <td></td> <td>8. HOLE I</td> <td></td> <td><u>ve j</u></td> <td>011004 11</td> <td><u></u></td> <td></td> <td></td> <td>•</td>	SIZES A	ND TYPES O		and the second			8. HOLE I		<u>ve j</u>	011004 11	<u></u>			•
$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	AND SAM	MPLING EQU		"" maerocore										
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					. <u> </u>		9. SURFA		1					
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							10 DATE							
MA     MA       3. DEPTH DRULED NTO ROCK $\mu/A$ 10. DEPTH DRULED NTO ROCK $\mu/A$ 11. DEPTH TO WATER AND LARSANELEMTS ISPECTY)       12. DEPTH OF HOLE       13. DEPTH OF HOLE       14. TOTAL IDEPTH OF HOLE       15. DEPTH TO NUTER LEDL MESUREMENTS ISPECTY)       16. DEPTH TO NUTER LEDL MESUREMENTS ISPECTY)       17. OTHER WATER LEDL MESUREMENTS ISPECTY)       18. DEPTH OF MOLE       19. TOTAL IDEPTH OF MOLE       10. DEPTH TO NUTER LEDL MESUREMENTS ISPECTY)       10. DEPTH DESCREPTION OF HOLE       11. DEPTH DESCREPTION OF HOLE       12. DEPCH       13. DEPTH DESCREPTION OF HOLE       14. DEPTH DESCREPTION OF HOLE       15. DEPTH DESCREPTION OF HOLE       16. DEPTH DESCREPTION OF HOLE       17. DESCREPTION OF HOLE       18. DEPTH DESCREPTION OF HOLE       19. DESCREPTION OF HOLE       10. DEPTH DESCREPTION OF HOLE       10. DEPTH DESCREPTION OF HOLE       11. DEPTH DESCREPTION OF HOLE       12. DEPTH DESCREPTION OF HOLE       13. H       14. DEPTH DESCREPTION OF HOLE       15. DEPTH DESCREPTION OF HOLE       16. DEPTH DESCREPTION OF HOLE       17. DESCRE							45 0507		<u>.</u>		7/14/0	<u>,6</u>		
3 DEPTH PRILED INTO ROCK $MA$ 4 TOTAL DEPTH OF HOLE 19 4 TOTAL DEPTH OF HOLE 19 5 DESTURBED 19 TOTAL NUMBER OF CORE BOXES 0 SAMPLES FOR CHEMICAL AMALTYSS 2000 METALS 01HER (SPECIFY) 21. TOTAL 0 2 DEPOSITION OF HOLE SACKFILED MONITORIA WELL 01HER (SPECIFY) 23. SIGNATURE OF INSPECTOR METALS 02HER AVALATION 0 8 DEPOSITION OF MATERIALS FELD SCREENING 0EOTECH SAMPER AVALATION 00HT MATERIALS 0 1 DESCRIPTION OF MATERIALS FELD SCREENING 0EOTECH SAMPER AVALATION 00HT MATERIALS 0 1 DESCRIPTION OF MATERIALS FELD SCREENING 0EOTECH SAMPER AVALATION 00HT MATERIAL 0 1 DESCRIPTION OF MATERIALS 0 1 DESCRIPTION OF MATERIALS 0 2 DEPTH DESCRIPTION OF MATERIALS 0 3 DEAL DEPTH DESCRIPTION OF MATERIALS 0 4 DEAL DEPTH DESCRIPTION OF	2 OVERB	URDEN THIC		A			15 DEPI			ICOUNTERED				
4. TOTAL BEPTH OF HOLE         17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)           19. OCTAL DEPTH OF HOLE         19. TOTAL NUMBER OF CORE BOXES           0         SAMPLES FOR CHEMICAL ANALYSIS         VOC           3	3. depth	DRILLED INT	O ROCK		÷		16 DEPT	H TO WATER /	AND EL	APSED TIME AFTE	R DRILLING COM	APLETED		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				/\	·········		17 OTHE			SUREMENTS (SPE	CIFY)			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		, ,		1										
0 SAMPLES FOR CHEMICAL ANALYSIS VOC METALS OTHER (SPECIFY) OTHER (SPECIFY) OTHER (SPECIFY) OTHER (SPECIFY) 21 TOTAL C 3 - 3	8. GEOTE	CHNICAL SA					19		BER OF	CORE BOXES	-			
2 DEPOSITION OF HOLE M/A ELEV DEPTH DESCRIPTION OF MATERIALS ELEV DEPTH DESCRIPTION OF MATERIALS ELEV DEPTH DESCRIPTION OF MATERIALS CLAAY, brown (%) oyg) medium demp: h:ghiy plas:c CLAY, dark yellowish brown 	O SAMPL	ES FOR CHE			<del></del>		·			HER (SPECIFY)	OTHER (SF	PECIFY)		
2 DISPOSITION OF HOLE M/A Buttonit A Buttonit A B		3			3	3						•	RECO	VERY %
BELLEV     DEFTH     DESCRIPTION OF MATERIALS     FELD SCHERING RESULTS     GEODECH SAMPLE MAILVICAL RESULTS     BLOW SAMPLE NO     BLOW SUMPLE NO       LLAY, browd (1/5 iovR) med. wm d-mp1 h: ghly ploc: c     0     58 0 1     0       1     0     3.4     0     3.4       2     0     3.4     0     3.4       3     0     3.4     0     1       4     0     3.4     0     1       4     0     3.4     0     1       4     0     1     0     1       5     0     0     1     1	2. DISPOS	DISPOSITION OF HOLE BACKFILLED MONITOR					OTHER (SPECIFY) 23. SIGNATURE OF I				INSPECTOR			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							N	A	1	list 1	m			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					L	FIELD SC		GEOTECH SA			BLOW			
$ \begin{array}{c}                                     $				C C C C C C C C C C C C C C C C C C C					)X NO.					
$ \begin{array}{c}                                     $			CLAY,	brown (43104R) 4	redim									
$ \begin{array}{c}                                     $			damp, h	ighly plasic		0				5801				
Z     0     3.4       Z     0     4       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0       J     0     0										01				
3 = 0 $3 = 0$ $3 =$														
$3 = \begin{bmatrix} 2 \\ -4 \\ -4 \end{bmatrix}$ $3 = \begin{bmatrix} 2 \\ -4 \\ -4 \end{bmatrix}$ $3 = \begin{bmatrix} 2 \\ -4 \\ -4 \end{bmatrix}$ $3 = \begin{bmatrix} 2 \\ -4 \\ -4 \end{bmatrix}$ $3 = \begin{bmatrix} 2 \\ -4 \\ -4 \end{bmatrix}$ $3 = \begin{bmatrix} 2 \\ -4 $		- ]				0								
2 3 3 CLAY, dark yellowish brown (3/410VR) stiff, damp highly plastic . 7 1245 0 1245 1245 1245 1245		11												
2 3 3 CLAY, dark yellowish brown (3/410VR) stiff, damp highly plastic, 4 5 PROJECT HOLE NO.		-						3.4						
2 3 3 CLAY, dark yellowish brown (3/410VR) stiff, damp highly plastic . 7 1245 0 1245 1245 1245 1245						0		4						
3 CLAY, dark yellowish brown (3/410VR) stiff, damp highly plastice, 7 5 PROJECT HOLE NO.		2												
3 CLAY, dark yellowish brown (3/410VR) stiff, damp highly plastic, 5 PROJECT HOLE NO.														
CLAY, dark yellowish brown     0						0								
CLAY, dark yellowish brown     0		1												
CLAY, dark yellowish brown     0		3 -												
		-				0								
		1.1.	CLAY, do	uk yellowish be	1034 N									
			(3/410VR)	stiff, damp										
			highly p	lostie,								101-		
					•	0						1245		
			4		,	ľ								
5 - HOLE NO.														
PROJECT HOLE NO.														
PROJECT HOLE NO.		5 -											<u> </u>	
IRK JUN 89 55 40747 FTRI-020 DF02	=	08M		PROJECT	7						HOLE NO.	. 07.0	0.2477	



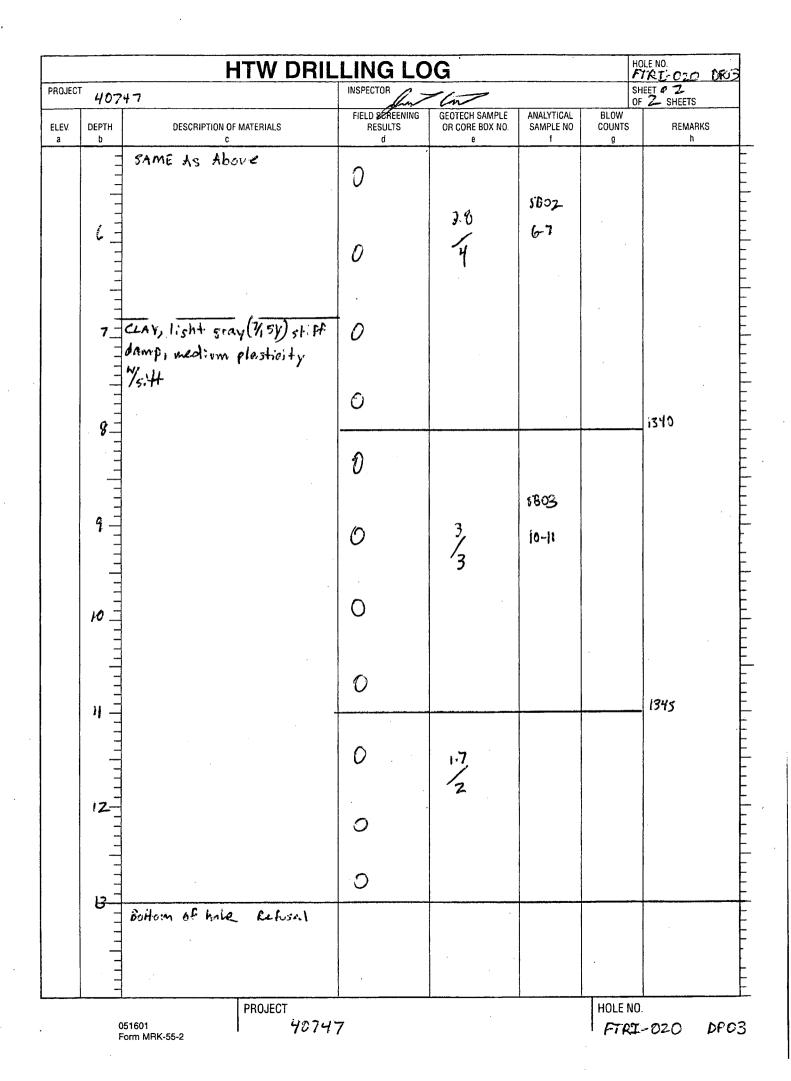
Form MRK-55-2

40747

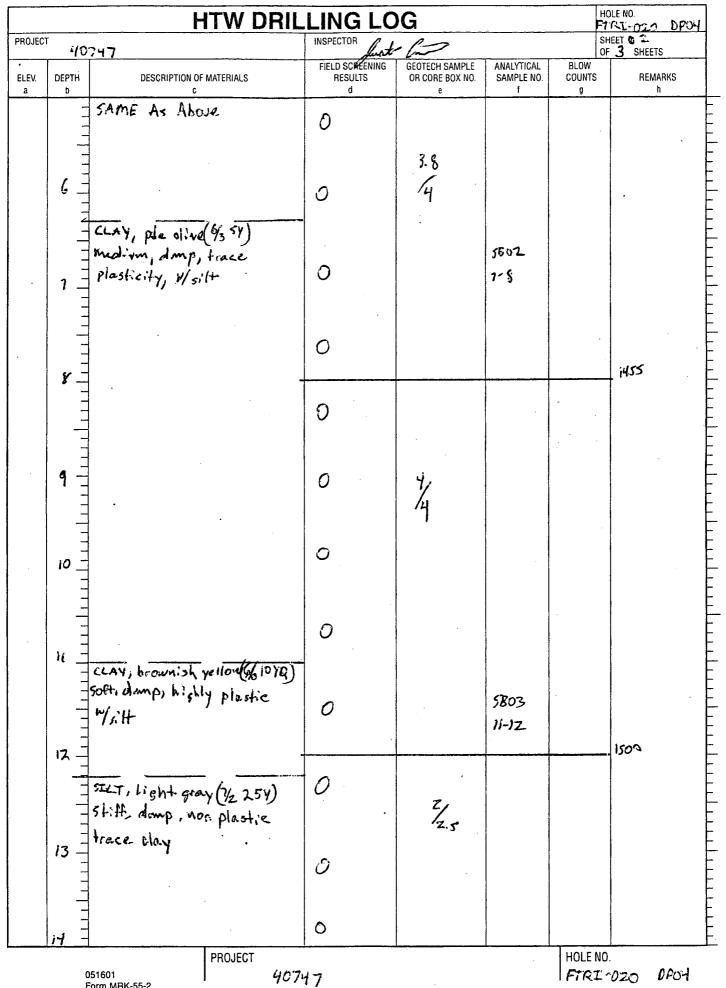
HOLE NO. **HTW DRILLING LOG** FTRE 020 DPO2 SHEET 03 OF 3 SHEETS INSPECTOR PROJECT 40741 ESI 49 siles ANALYTICAL SAMPLE NO. FIELD SCREENING RESULTS BLOW GEOTECH SAMPLE REMARKS OR CORE BOX NO COUNTS ELEV DEPTH DESCRIPTION OF MATERIALS f h d e a а SAME AS Above 3/3 D CLAN, dark reddish brown 14-(33,304R) soft, damp, nor 0 plastie Mailt 0 1300 15 0 SILT, light gray (7, 104R) soft, domp, non plastic, r 3/3 16 = silt 0 UNY, dark reddish brown 0 17 (3/3 5/YR) damp, med. um, Hrace plast, c, some sitt CLAY, oi: ve gray (5/2 54) stiff, damp, trace plastie 0 1305 18 trace shale pieces 1 4 0 19 Bottom of hole Refusal HOLE NO. PROJECT 051601 Form MRK-55-2

	. <u></u>	HTW [	DRILL	ING	LO	G		<b>-</b>		HOLE		DFUS
COMPANY NAME	·		2	DRILLING	SUBCONT	RACTOR EF	<u> </u>			SHEE	T 1	<u> </u>
PROJECT	ns & me	Downell	L	<u> </u>	4. LOCAT		<u> </u>	<u></u>		0-2	SHEETS	
	747 E	SI 49 siles					<u>k.L</u>	TION OF DRILL				
NAME OF DRILLER	E. n. m	<i>werhoff</i>	•		6 MANU	ACTURER'S D	ESIGNA	TION OF DRILL	,			
SIZES AND TYPES OF DR		Central 5400			8. HOLE	OCATION	<u>Thi</u>	reet Fus	h			
AND SAMPLING EQUIPME		1 macrocore				14						
		·····					1					
					10. DATE				11. DATE COMP		<u></u>	
		<u> </u>			-	7/14/0	k		7/14/0			
2. OVERBURDEN THICKNE					15 DEPT	H GROUNDWA	ter en	COUNTERED				
DEPTH DRILLED INTO R								APSED TIME AFTE				
5. DEPTH DAILLED INTO A	NA					NA						
. TOTAL DEPTH OF HOLE					17. OTHE		EL MEA	ASUREMENTS (SP	ECIFY)			
B GEOTECHNICAL SAMPLI	<u> </u>	DISTURBED		STURBED				CORE BOXES				
GEUTEGHNIGAL SAMPLI	0	DISTORBED					SER UP	OUNE DUXES				
0. SAMPLES FOR CHEMICAL ANALYSIS VOC META					······································			HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL	
-	•		3							æ	RECOVI	ERY %
2 DISPOSITION OF HOLE		BACKFILLED	MONITORING	G WELL	WELL OTHER (SPECIFY) 23. SIGNATU			SIGNATURE OF IN	SPECTOR		<b>_</b>	
NA Bentonite NA				N	Δ		fut	In				
		BCRICILL		FIELD S	1	GEOTECH SA	MPLE	ANALYTICAL	BLOW	Γ	<u></u>	
ELEV. DEPTH	DES	CRIPTION OF MATERIALS			SULTS	OR CORE BO		SAMPLE NO.	COUNTS		REMARKS h	
	AY . Lee	-	420		<u> </u>			· ·	g			
	-Pr ned	wn (V310yR) s lium plasticity dark grayish	/ U R R	0				5601				
	1,							0-1				
	ay very	dark grayish	provn			2/		_				
	LIOYR) S	off; domp, no	5 <b>A</b>	0		2/2						
1 1. 1.	astic (											
- 4	W , brow	W( #3 104R) 51.1	<del>t</del>	1								
	mp, no	n plastic		0								
		•										
	nstac	Cobbill		1								
	7 7	11	/	1								
	VO Es.	covery	/ ,									
I I	/	, /	· /									
3	/ /	. /										
			11									
E	/ /		/									
	· /		/			1				1335		
	AY, redd	ish brewn (Hig	SYR)									
1 72	st dans	o, nem plastic	Game									
1 1	<b> </b>  .		1.000	0					• •			
	14											
	•											

l



		<u></u>	HTW C	RILL	ING	LO	G				HOLE	NO 1-020 DPO
COMPAN	YNAME			2.	DRILLING	SUBCONT	RACTOR	PS			SHEET	SHEETS
ROJECT		+ McCo	mell		<u></u>	4 LOCAT	ION				10-3	SHEETS .
		17 ESI	49 siles	· · · · · · · · · · · · · · · · · · ·			Fort	Ril	CV ATION OF DRILL			
NAME OF	DRILLER	Eric N	<i>reclasff</i>						Direct A.	sh		
	D TYPES OF	DRILLING	Georgia 5400	3		8. HOLE	LOCATION	<u> </u>				<u></u> .
ND SAM	ipling Equi	PMENT	" Macrocore	,								
		F				9. 0014 A	NA	IV .				
		F				10. DATE	STARTED 7/14/	. L		11. DATE COMP		
OVERBL	IRDEN THIC	KNESS	· · · · · · · · · · · · · · · · · · ·	<b></b>		15. DEPT	H GROUNDW		VCOUNTERED	7/14]	00	.,,,
		NI	4				NA		······································			
DEPTH I	Drilled int	O ROCK	A			16. DEPT	りしてい H TO WATER リム	and el	APSED TIME AFTE	ER DRILLING COM	<b>IPLETED</b>	
TOTAL I	DEPTH OF H	OLE				17 OTHE	R WATER LEV	/el me/	ASUREMENTS (SP	ECIFY)		<u>.</u> , <u>.</u>
OFOTE	HNICAL SA		DISTURBED		STURBED	10			CORE BOXES			
GEOTEC	/TINICAL JAI	0	0				<u> </u>		CONE DONEO			
SAMPLE	s for che	MICAL ANALYSI	s voc	METAL	S	OTHER (SPECIFY)		01	THER (SPECIFY)	OTHER (SPECIFY)		21. TOTAL COR RECOVERY
3 — 3												. %
DISPOSITION OF HOLE BACKFILLED MONITORIN					WELL	· · · · ·	(SPECIFY)	23. :		SPECTOR		
	N	4	Bentonite	NA		NA			furt l	n	_	
EV. a	DEPTH b		DESCRIPTION OF MATERIALS c			CREENING SULTS d	GEOTECH S OR CORE BO e		ANALYTICAL SAMPLE NO f	BLOW COUNTS 9	ī	REMARKS h
	Ξ	CLAY, US	ery dark gray: th soft, damp, med ty	brown					5B01			
	-	(3/210YR)	soft, damp, med	ium	0				0-1		-	
		plastici	fy									
	1 =						3					
		CLAY, NO	rown (3/3 104R) still trace plastic	÷,	0							
	_	damp, 1	liace plastie				ר'					
					0							
	7									•		
				-								
					0							
	3											
	-										2	
					.							
					0							
	4_				ļ	<u>.</u>			<u> </u>		1450	
	=											
					0							
1					1		1		1		1	



Form MRK-55-2

HTW DRILLING LOG PROJECT 40147 EST 49 sibes INSPECTOR SHEET 03 OF 3 SHEETS											
PROJECT	407	47 ESI 49 sibes	INSPECTOR	North Contraction of the second secon		SI O	HEET 03 F 3 SHEETS				
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS	difeld screening Results d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS				
	-	SAME AS Above	0								
	-	****					1305				
	-	Refusa (									
	5										
	-										
	·										
								1			
	-										
	1										
	-										
		•									
	-										
	-										
		PROJECT				HOLE NO	<u> </u>				
	0	51601 407 prm MRK-55-2	47				020 DF01				

1997 - A.C. (1997)

-

			HTW [		ING		G				HOLE	
						SUBCONT					FTR SHEET	1-020 DF0
COMPAI	NY NAME	Burne + Me	Donnell	2	UNILLING		EFS				OF 3	SHEETS
PROJEC		10747 EST	LICE			4. LOCA	Fort F	۲ <b>۱</b> -	,			
NAME C	of Driller						FACTURER'S D	ESIGN/	ATION OF DRILL			
			herhoff					10:	rect fush			
	ND TYPES O MPLING EQU	F DRILLING ( IPMENT 4	PEOPROLE SHOO			8. HOLE	LOCATION					
				· ·		9. SURF/	CE ELEVATION	١				
				<u> </u>						1 DATE COM		
			······				7/11/0	6		7/17/		
OVERB	BURDEN THIC	KNESS				15. DEP1	TH GROUNDWA	TER EN	COUNTERED			
DEPTH	DRILLED INT	O ROCK				16. DEPT		AND EL	APSED TIME AFTE	R DRILLING CO	MPLETED	
		NA	·····				NA					
TOTAL	DEPTH OF H	10le . J.O .	.2			17. OTH	ER WATER LEV	el ME/	ASUREMENTS (SPE	:CIFY}		
B. GEOTE	CHNICAL SA	MPLES	DISTURBED		ISTURBED	19	-	BER O	CORE BOXES			
	ES FOR CHE			META	C LS		O R (SPECIFY)	01	THER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE
SAMPLES FOR CHEMICAL ANALYSIS VOC META						(			0	0		RECOVERY
				3 WFH							%	
. 00700	DISPOSITION OF HOLE BACKFILLED MONITORIN					1	A		lat la			
elev.	DEPTH	DES	CRIPTION OF MATERIALS				GEOTECH SA		ANALYTICAL SAMPLE NO.	BLOW COUNTS	F	EMARKS
a	b		C		<u> </u>	d	e		f	g		h
		Fill clay	Ŷ		0				5801			
							16		0-+			
	· •						1/4		1-2			
	1				6		77					
		UAY, da	rk yellowish b	town	1							
	11	(3/41040)	nedium, medi	- 111								
	2 -	plast city	du o	•	0							
		/ Cry	) acomp									
	11											
	·				0							
		CLAY, dar	k bears (2/310	YR)	Ĭ							
		medium	medium plastic	ity								
		damp										
					0							
	4								├		6830	
					1							
			y dark brown	T	0		3/3	•				
			A to a star hand of the	126-1091	(I)		1 /⊀		1 1		1	
		SLAY, VEI	ium plastici	ly long	1							

•

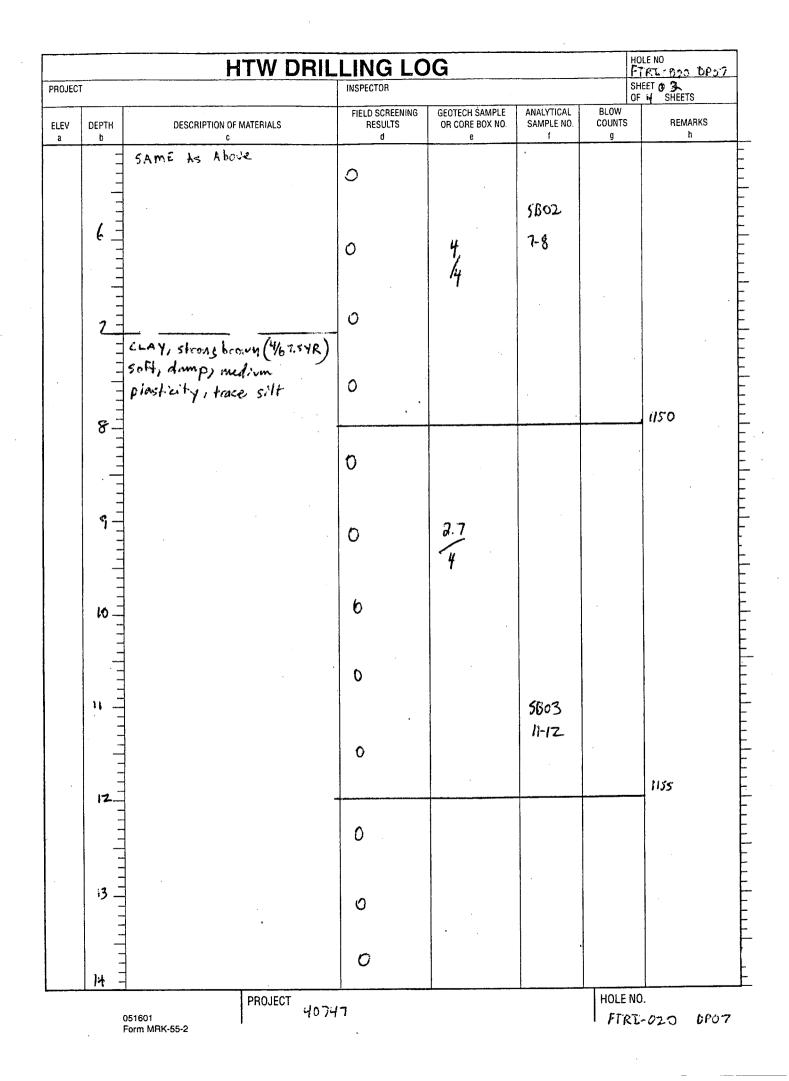
HTW DRILLING LOG										
ROJECT	407.	17 EST 49 siles	INSPECTOR hat	· Cur			SHEET 6 + DF 3 SHEETS			
LEV a	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h			
		SAME AS Above	0							
	6 1 1 1 1	CLAY, Slack (4 IOVR) stiff trace plastic	0		\$B02					
	<b>7</b> 11111		0		67		0835			
	8	SELT, light yellowish brown (6/4104R) medium, damp, Irace plashivity	0	31 13			· · ·			
		CLAY, dark yellowish brown (24104A) suft, damp, highly plastic, trace silt	0							
	9   1   1	CLAV, pake prown, (0/3104R)	0		5503 9-10					
	- 10_	damp, soft, hisky plastic Vs:1+					0540			
	: : : :	(244, very dark brown (3/2104R) medium, highly plastidic, demp	0	2.3						
			Ø	25						
	j2		0				0850			
			0							
			Ģ							
		1 PROJECT 051601 - イロアイ・フ	I	1	<u>, I</u>	HOLEN				

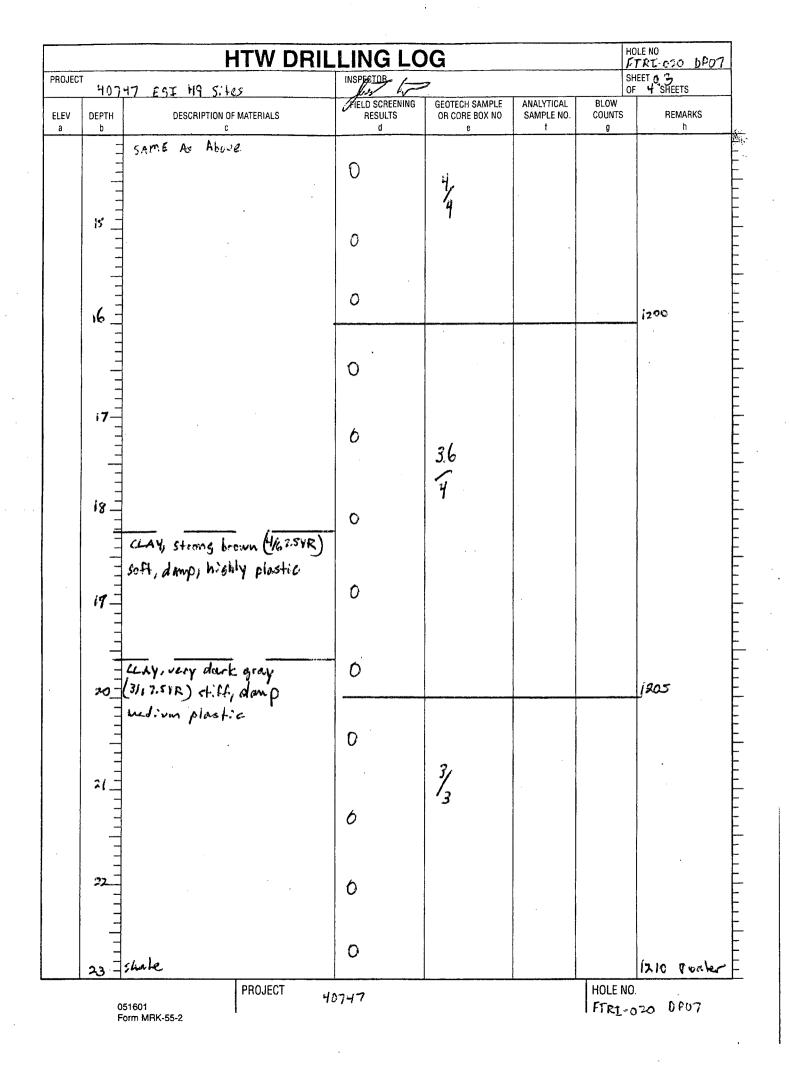
		HTW DRIL			····		HOLE NO FTREFOLD DEUS	
PROJECT	ि संद	1747 EST 49 siles	INSPECTOR	R.Z			Sheet & 3 Of 3 Sheets	
ELEV	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS	
		same as above	0					
	/4		0	3.2				
			0		•			
			0				0855	
	// 	CLAY, very durk grayish brown (3/2 104R) soff., domp highly plestic	0					
	÷۲	hickly plastic	D					
	5  5 	CLAY, strong brown (4/67.54R) malium, damp, medium plasficity	Ø	4/14				
		plasticity	0		,			
	111111	surle cobbles	0		,		<b>U</b> waler	
	20						_ 0705 0715	
	-	Refused bottom of noil						Ē
	-							
								F
								E
	0	PROJECT				HOLE N	0.	

			HTW	DRILL	ING	LO	G				HOLEI	no 1-020 of 06
COMPA	NY NAME	Buchs	+ MeDonnell	2.	DRILLING	SUBCONT	RACTOR EPS				SHEET	1 - Sheets
PROJEC	T			······		4. LOCAT		D .1	d 1.5			
NAME O	FDRILLER	907	47 ESE 49 5.1	<u> </u>		6. MANU			TION OF DRILL	<u>.</u>		
		Eric	merhoff						rect fush			
	ND TYPES O		Geoprole 5405			8. HOLE	LOCATION					
AND SAI	Mpling Equi	IPMENI	"I' macroeore			9 SUBEA		J				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
			<u></u>			• • • • • • • •	NR					
						10. DATE	STARTED	1		11. DATE COMP		
OVERR	SURDEN THIC	KNESS				15 DEPT	71171 H GROUNDWA			7/1/06		
. OVENE		MLOO	A N				NA					
DEPTH	DRILLED INT	O ROCK	NA			16. DEPT		AND EL	APSED TIME AFT	er Drilling Coi	MPLETED	
TOTAL	DEPTH OF H			, <u></u>		17. OTHE	NA R WATER LEV	EL MEA	ASUREMENTS (SP	ECIFY)		
101/12			10				NA					
GEOTE	CHNICAL SA	MPLES C	DISTURBED	UNDIS	STURBED C	19	. TOTAL NUM O	Ber of	CORE BOXES			
). Sampl	ES FOR CHE	MICAL ANALYS		METAL		OTHER	(SPECIFY)	10	THER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL COR
		3		3		_	· · · ·			-		RECOVERY %
	SITION OF HO		BACKFILLED	MONITORING	WELI	OTHER	(SPECIFY)	23	SIGNATURE OF IN	SPECTOR		ла 
		JAR	bentonik	A LL		N.	· · · · · · · · · · · · · · · · · · ·		to be			
		-	DE.ULON .	<u> </u>	FIFIDS		GEOTECH SA		ANALYTICAL	BLOW		
LEV	DEPTH b		DESCRIPTION OF MATERIALS		RES	SULTS	OR CORE BC		SAMPLE NO.	COUNTS	R	REMARKS h
8		CLAY,	<u>م</u>			-				8		
			• -		C							
			<u></u>		1 -							
		LLAY, d	lark brown (3/31) damp, medium /	OYR)	1		4		sboi			
	1	st:ff;	damp, medium 1	plasticity		•	4		1-2			
		trace s	;1+		0		ļ .					
					l I		I				ł .	
					n							
			lark reddish, bri		0							
					0							
		(3 SYR	) soft, damp, ,		0							
			) soft, damp, ,		0							
•		(3 SYR	) soft, damp, ,									
	11111	(3 SYR	) soft, damp, ,									
	11111	(3 SYR	) soft, damp, ,									
	11111	(3 SYR	) soft, damp, ,									
	ما 111   111   111   111	(3 SYR	) soft, damp, ,		0						6950	
	11111	(3 SYR	) soft, damp, ,		0						0950	)
	ما 111   111   111   111	(3/3 SVR Maticii	) soft, dawp, ,	medium	0		3.7		5802		6950	)
	ما 111   111   111   111	(3/3 SVR plat:)	) soft, danyp, i Y ery dank grayis	medium sh brown	0		3.7.		5802 5-6		0950	)
	ما 111   111   111   111	(3/3 SVR Mat: 1) CLAY, U St: 44, 0	) soft, dawp, ,	medium sh brown	0		3.7. 4				6950	)

. • .

		H	TW DRIL	LING LO	G			HOLE NO FTAT-020 DPID
PROJEC	T HOT	147 ESI 49 5.1		INSPECTOR fast	[n]			SHEET & Z DF Z SHEETS
ELEV	DEPTH	DESCRIPTION OF I		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS About	2	0				
	6 -			С				-
	-							
	7 _			0				
		SILT, very pah	e brown					
		SILT, very pah (\$/210YR) soft, trace plastic	damp:	0				
	8-	trace plasfie						Qq55
				0	31			
					3/2			
	4-	Shuhe		3		5503 9-10		
		CLAN / 7/ yellow	(Y6 104R)					
	-	solt, damp, med Wishare	New plasticity	0			÷	
	10_	Refusal Bollom	cf heil					- 000 -
		4						
		4 4 4						
		4 4 4 ·						
L		1			 			
		051601	PROJECT 407イフ				HOLEN	10. 1-020 0PoG



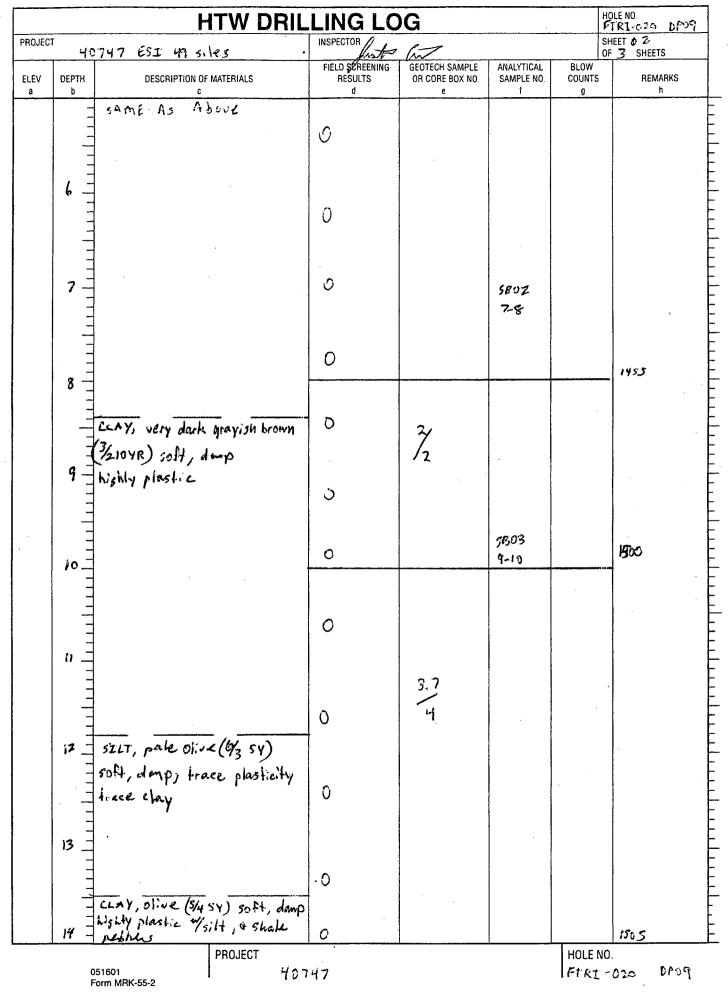


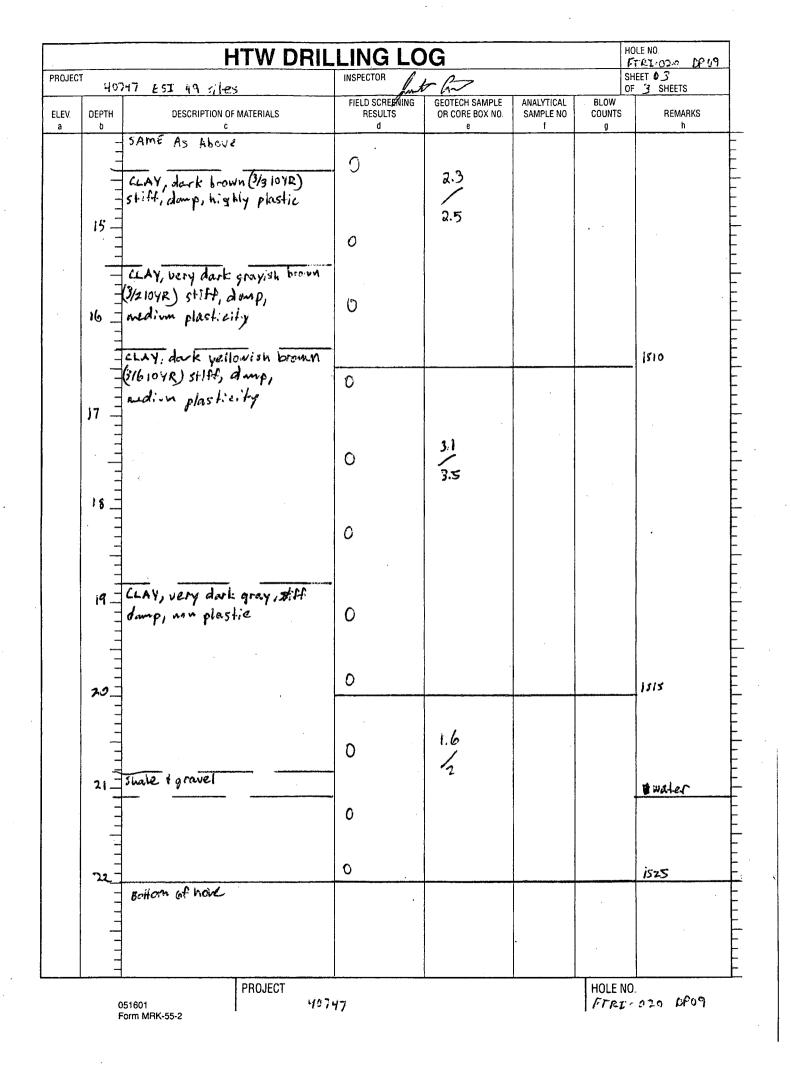
		H	ITW DRIL	LING LC	G	······································	1-1	DLE NO FRI-020 DP07	
PROJEC	т 40-	747 ESI 49 si	125	INSPECTOR	>		S⊢ OF	HEET O H H SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF c		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h	
				0	2.6				111111
-	24-			0	2.8				
	አ 11 11			0					
				0	·			1720	
	26_	Bottom of indu							
				· · · · · · · · · · · · · · · · · · ·					
			- - - -						
L		051601	PROJECT 40747	l	I	I	HOLE NO	-02-0 DP07	<u></u>

			HTW [	DRILL	ING	i LO	G	<u> </u>			HOLE	NO. [-020] DPU8
1 COMPA	NY NAME	Burns + 1	neDannell	2.	DRILLING	SUBCONT	RACTOR	ËPS	. <u></u>		SHEET	
PROJEC	т					4. LOCAT						
5 NAME (	)F DRILLER		49 siles			6. MANU	FORT R		TION OF DRILL			
			herboff.			6.	oprole		creet Pus	h		
	ND TYPES OF		eoprole 5400			4						
			11 macrocore					1				
						_	NA					
			· ·		<u></u>	10. DATE	STARTED	1106		11. DATE COMF フ/17/3 6		
2 OVERE	BURDEN THIC	KNESS				15 DEPT	H GROUNDWA	-				
		JA				40.000	<u>N/C</u>		APSED TIME AFT			
B. Depth	I DRILLED INT	о поск				16. DEPI		AND EL	APSED TIME AFT	ER DRILLING CUI	MPLETED	
4. TOTAL	DEPTH OF H	OLE q'	·. · · · · · · · · · · · · · · · · · ·			17. OTHE		el mea	SUREMENTS (SP	ECIFY)		
B. GEOTE	ECHNICAL SAI	MPLES D	DISTURBED	UND		19	TOTAL NUMI	BER OF	CORE BOXES			
O SAMPL	ES FOR CHE	MICAL ANALYSIS	VOC	META	s	OTHER	(SPECIFY)	TO	HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL CORE RECOVERY
		3	-	3		-				-		RECOVERY %
2. DISPO	SITION OF HO	LE	BACKFILLED	MONITORING	6 WELL	OTHE	(SPECIFY)		SIGNATURE OF IN			· · · · · · · · · · · · · · · · · · ·
	٨	JĄ	Bentonitie	NA	<b>.</b>	~	A		laster to			
ELEV . a	DEPTH	DE	SCRIPTION OF MATERIALS			CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9		REMARKS h
		CLAY; dai stitt, daw CLAY; dar	k reddish brown k reddish brown k reddish brown trace plasticit	n(3/25YR) n(3/25YR)	0		3.8 4		580j 1-2		,4 <i>15</i>	· .
•		,	ROJECT		0					HOLE NO		

		HTW DRIL	LING LC	)G		ŀ	HOLE NO. STRE 020 DPUS SHEET 0 2	
PROJECT	407	47 ESI 49 silves	INSPECTOR Just	$\square$		S   C	Sheet () 2- DF 2- Sheets	
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	
		samé as above	.0.		1802			
	6	CLAY, brown (1/310YA) soft damp, highly plastic	0	4/4	6-7			
	7   1   1   1		0		•			
	8 1	CLAY: VETY derk gravish brown	0				1920	
		CLAY; very dork grayish brown [3/2104R) st. 4, domp, non plastic	D	1.1	5803 8-9			
	9 -	shale Refused Soften of hohe				<u></u>	1425	
		KEPUSAL SUMMA A HOLE						
		,						
							•	
		• •						
		PROJECT 051601 107# Form MRK-55-2	7	· · · · · · · · · · · · · · · · · · ·		HOLE N FTRI		

				нту с	RILL	ING	LO	G				HOLE	NO. 2-020 DP09	
1 COMPA					2.	DRILLING	SUBCONTR	RACTOR				SHEE	Γ1	1
PROJEC		rns 4 r	neb	011211			4. LOCAT	· EP	5			OF 3	SHEETS	1
PROJEC		0747 _E	51	49 siles				ort Rile	ý.					]
5 NAME O										TION OF DRILL				]
		Eric M.					8 HOLEI		<u>0: r</u>	ect Push	<u> </u>		<u></u>	{
	ND TYPES O			macroeone	<u></u>			NA						
			<sup>-</sup> l				9 SURFA	CE ELEVATION				<u></u>		1.
								NA		T				4
							10 DATE	JI171d	<b>'</b> _		1. DATE COMP 7/17/1			
2 OVERE	URDEN THIC	KNESS		<u></u>			15 DEPTI	H GROUNDWA		ICOUNTERED				1
			NA					21.1						4
13. DEPTH	DRILLED IN		JA				16. DEPT	/ H TO WATER مراج	ND EL	APSED TIME AFTE	R DRILLING CO	MPLETED		
4. TOTAL	DEPTH OF I		- , .				17. OTHE		EL ME/	SUREMENTS (SPE	ECIFY)			1
			22.					NA						1
18 GEOTE	CHNICAL SA	MPLES		DISTURBED		STURBED	19	TOTAL NUMI	BER OF	CORE BOXES				
20. SAMPI	ES FOR CHE	MICAL ANALYS			METAL		OTHER	(SPECIFY)	то	HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL CORE	1
		3	f		3			,	<u> </u>		· · · · ·	•	RECOVERY %	
				BACKFILLED	MONITORING			(SPECIFY)	22 4	SIGNATURE OF INS	PECTOR		70	{
cz. UISPUS	Sition of H		┢		JA		N			lat w				
		N N N		Bentonike	~~~			· · · · ·	and the second			r		4
ELEV	DEPTH		DESC	RIPTION OF MATERIALS	,	RES	CREENING GULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO f	BLOW COUNTS 9		REMARKS h	
		Fill Cla	Y -										····	E
	-					0				(Pa)				F
			$\sim \sim$	man				4/		5801				F
	-	CLAY, O	dark	brown 3/3104F plastic	y ##t			14		0.5-1.5				F
	i	damp,	non	plastic		0								<u> </u>
	_					ľ								F
														F
	-	CIET: V	12.1 v	pale brown (74	INVE)	1								F
	_	soft, o	lam	o, trace plast.		0								F
	2	Malon	•	,										E
	_	] / /												F
		1				0								F
		/2 AL	i. I	alle water these	A Pr					]				E
	3	redium	arr In	yellowish brow Mp, non phest	1410YR	1		ļ						F
	-	1/3:14		1-5 FIOM PUESI		0								F
		7 3115												<u>F</u>
	-	CLAV .	dat	brown, (3/3 10	(av	1		]						F
	ų	medivy	No A	top, medim								1450		F
	7	plastic												F
	_	Firstic						· 2.1						F
		CLAV, H	rom	n(#3107R) med.	inn	0		-2.1				<b>.</b>		F
	-	dano.	hich	ly plasfic "	Y. H									E
	5 -		, , , , , , , , , , , , , , , , , , ,	1							<u></u>			E
			PRC	NECT							HOLE NO.			
NRK ]	ORM IN 89 55		ł	40747							FTRI	- 020	6609	





			HTW	DRILL	ING	LO	G				HOLE N FT FI	10. -029 DPI 1
COMPAN	Y NAME	<u></u>		2.	DRILLING	SUBCONTR			- <u></u>	<u>.</u>	SHEET	1
		irns & M	ne Oniane 11			E I 4. LOCAT					<u>د</u> ۱۵۴	SHEETS
PROJEC		747 ESI	19 siles	•			Ford R:	12.V.				
NAME O	F DRILLER					6. MANUF	ACTURER'S D	ESIGNA	TION OF DRILL		•	
		Eric M		<u></u>		8. HOLE I		10	rect fysl	<u>م</u>		
	ND TYPES OF MPLING EQUI		Geoprole 540				NA					
						9. SURFA	CE ELEVATION	1				
		·					<u>Av</u>		T	11 DATE COMP		
						10. DATE	7/18/0	6		7/18/06		
OVERE	URDEN THIC	KNESS		<u> </u>		15. DEPT	H GROUNDWA	ter en	COUNTERED			
		N	A				20.8					
DEPTH	DRILLED INT		A			16. DEPT	h to water / メス	and el	APSED TIME AFTE	R DRILLING COI	MPLETED	•
TOTAL	DEPTH OF H	ole දාද	3.06			17 OTHE		EL MEA	SUREMENTS (SPI	ECIFY)		
GEOTE	CHNICAL SA	MPLES	DISTURBED	UND	ISTURBED	19	TOTAL NUM	BER OF	CORE BOXES			
SAMPL		MICAL ANALYSIS		META		OTHER	(SPECIFY)	то	HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL CO
		3		3				1				RECOVER) %
DISPO	SITION OF HO		BACKFILLED	MONITORING	G WELL	OTHEF	(SPECIFY)		GINATURE OF IN			
		NA	Bentonte	Tempore Piezounel		₩.		1/	hAG			
LEV. a	DEPTH		DESCRIPTION OF MATERIAL		FIELD S	CREENING SULTS d	GEOTECH S/ OR CORE BC e		ANALYTICAL SAMPLE NO	BLOW COUNTS g	F	EMARKS h
		(3/4DYR) medium CLAY, a (4/4 ion hoin play	lark yellowish medium, dan plasticity lark yellowish 8) stiff, dang stiff, dang stiff , dang	P i n brown )1 P soft	0		3.8		5801 1-2		0833	
	5	CLAY, da	tr <u>ace plaster</u> .rk yellow brown MP, nedium pl H	n (16'ioyr	5 0	ł						:

		HTW DRIL	LING LC	)G			HOLE NO. FTRI 020 DPN
ROJECT	. 4	10747 ESI 49 silles	INSPECTOP	17			SHEET 6 2 OF 3 SHEETS
LEV a	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	-	SAME AS Aboue	0	3.7			
	6		0	4			
	7	CLAN, pale olive (6/4104R) soft, dmp, highly plastic Wsilf	0		5502 7-8	•	
	<del>с</del> я 11111		0				0840
	<b>9</b>	CLAY, dart becaun (3/3 104R)	0	3.2			
	10	CLAY, dark becan (3/310YR) stiff, damp, <del>medium</del> highly plastic, trace silt	6	4			
			0			• .	
		CLAY, brown (4/3 104R) medium, damp, medium plasticity, trace silt	0		5B03 11+ iZ		
	12	rune ry, trace silt	0				0845
	13	CLAY, very dark gravish brown (3/210YR) skiff, damp medium plastigity	0	2.8			
	- 		0				
		PROJECT 551601 4074	7			HOLE I	VO. E-020 DP10

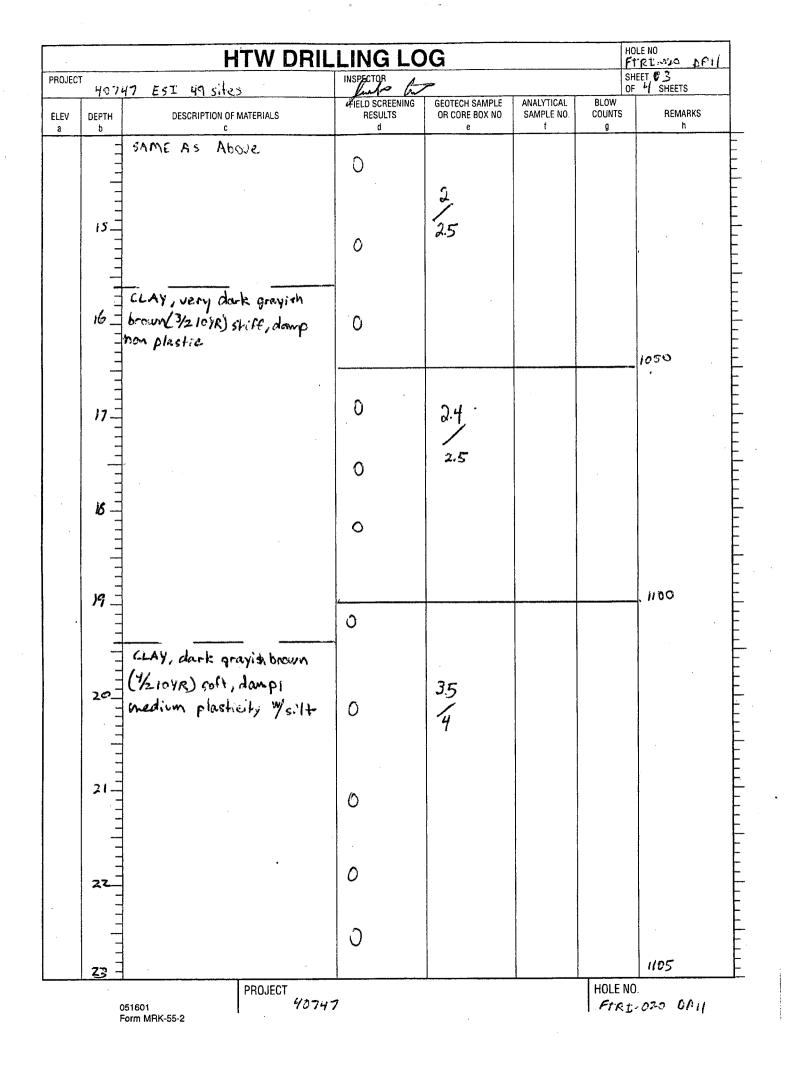
PROJECT		HTW DRIL	INSPECTOR	<u> </u>		SH	181-020 DP10 IEET (3
	40-	747 ESI 49 sites		GEOTECH SAMPLE	ANALYTICAL	OF BLOW	3 SHEETS
elev.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	OR CORE BOX NO	SAMPLE NO	COUNTS	REMARKS h
а	b	SAME AS Above					
			0				
			U				
	-	CIAN HE MY deals have 24 1040					3850
	15_	CLAY, very dark brown (72104R stiff, damp, trace plasticity					
		trace sith					
		Frace SiH	0				
				35			
	16_			2.5			
	-	CLAY, very dark gray (3/104R)	0	2.5			
		CLAY, very dark gray (3/1 104B) sliff, dmp, trace plasticity					
	-	· · · · · · · · · · · · · · · · · · ·					
	17_	4	0				
	-						0900
		CLAY, dark brown (3/3104B) medium, damp, medium plasticity					0400
	-	medium, damp, medium					
	15-	plasticity	0				
				2.1			
	-	-	0	25			
	19_	-					
		-					
			0				
		ELAY, pathe brown (1/3104A)					2910
	20_	= soft, damp, highly plastic				+	
		soft, damp, highly plastic Wsith & shale	0	0.6			
	-			0.6			<b>M</b> . 1. 0 <sup>4</sup>
						<u>\$</u>	V water or
	21-	- Refusily will set piezometer					
	-						
	-	-					
		_					
	-						
						HOLE	
		051601 H0747					- 820 DPIC

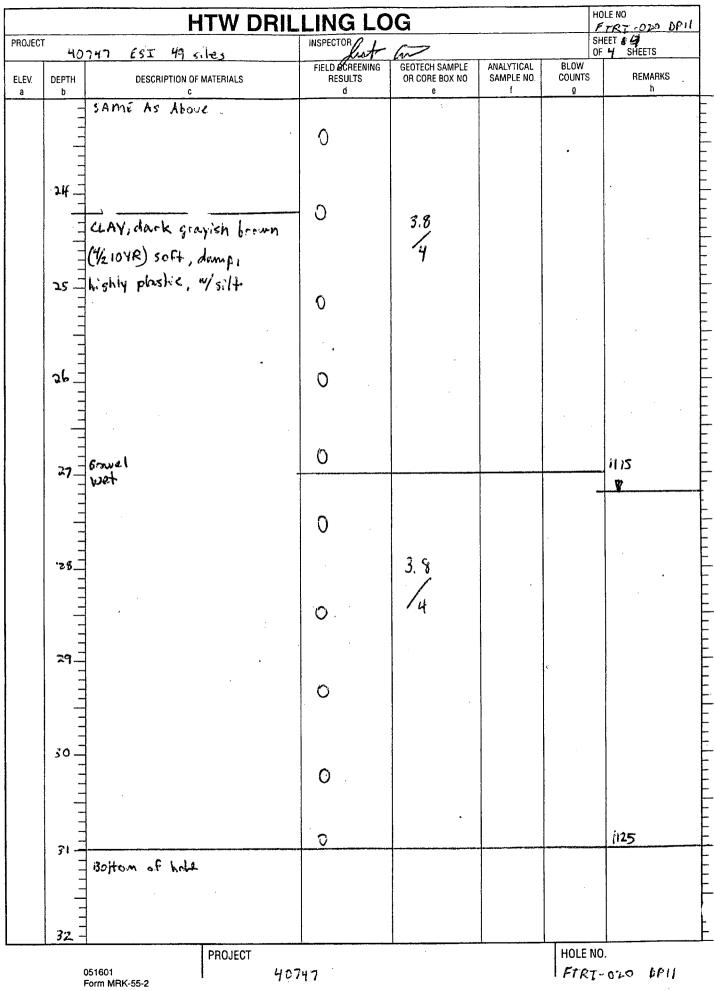
			HTW C	RILL	ING	LO	G				HOLE	NO. L-020 DP11
COMPAN	VY NAME		• • • • • • • • • • • • • • • • • • •	2.	DRILLING	SUBCONTR		F.c		<u></u>	SHEET	
PROJEC		dens d m	eDonnell			4 LOCAT					OF 7	SHEETS
THOSEO		10747 ES	SI 49 sites				Fort					
5. NAME O	F DRILLER	5000	merhoff						TION OF DRILL			
						8. HOLE I		Dire	ect Pesh		<u> </u>	
	nd types of Mpling Equi		Beoprale 5400. 1' macrocore				NA					
			1. 14160			9. SURFA	CE ELEVATION					
							NA		T			
						10 DATE	STARTED 7/18/2	56		11. DATE COMP 7/18/06	LETED	
2. OVERB	URDEN THIC	KNESS				15. DEPT	H GROUNDWA		ICOUNTERED		•	
	· · · · ·	NA	······				27.7				<u>.</u> . <u>.</u>	
3 DEPTH	DRILLED INT					16. DEPT	h to water / ハト	ND EL	APSED TIME AFTE	R DRILLING CON	APLETED	
	Depth of H	OLE		<u> </u>		17. OTHE		EL MEA	SUREMENTS (SP	ECIFY)		
- IVIAL		3	i				NA					
8. GEOTE	CHNICAL SA		DISTURBED		STURBED	19		BER OF	CORE BOXES			
0.000				META	0		(SPECIFY)		HER (SPECIFY)	OTHER (SF	PECIEY	21. TOTAL CORE
U. SAMPL	lo lon one	MICAL ANALYSIS	100		~		10, 2011 1	<u>                                     </u>				RECOVERY
		3		3		· ·						, %
2. DISPOS	Sition of ho		BACKFILLED	MONITORING	G WELL	1	(SPECIFY)	23. 5	SIGNATURE OF IN	SPECTOR		,
		NA	Bentanile	NA		N A		I	fror or			
ELEV.	DEPTH		DESCRIPTION OF MATERIALS			CREENING SULTS	GEOTECH SA		ANALYTICAL SAMPLE NO.	BLOW COUNTS	· ·	REMARKS
а	b .	TOP Seil	c			d	e		f	9		<u>h</u> .
		LAV de	erk yellowish b:	-C-J/N					5801			
			) stiff, dump, 1		0				0~1			
			- •									
		plastic	Le Irman (6/310YB	) to Cl	┥							
	/		a plastic, trace				3.5					
			ok vellowish bro		0							
		(HAICHE) C	Kff, dompinon	clashe			4					
:		W/sil+		r wolte								
	, =	÷										
·	1	Linestor	cobble		0							
		CLAY, de	uck yellowish b	rown								
			sliff, dimpin									
		platic-		•								
	3				0							
	=						· ·					
					0				1			
	-	ELAY. J.	ark vellowish h		1						1025	5
	4	4/410VR)	ark yellowish b medium, damp,						<u> </u>		+ "	
	-	modium	plasticity, W	e:14								
		₽ ₽ <b>₩₩₽</b> ₽" } •{ 179	prosticity, y		0							
	-											
	1	1	•		1		1		1		1	
	5 -											

MRK JUN 89 55

FTRI-020 OP11

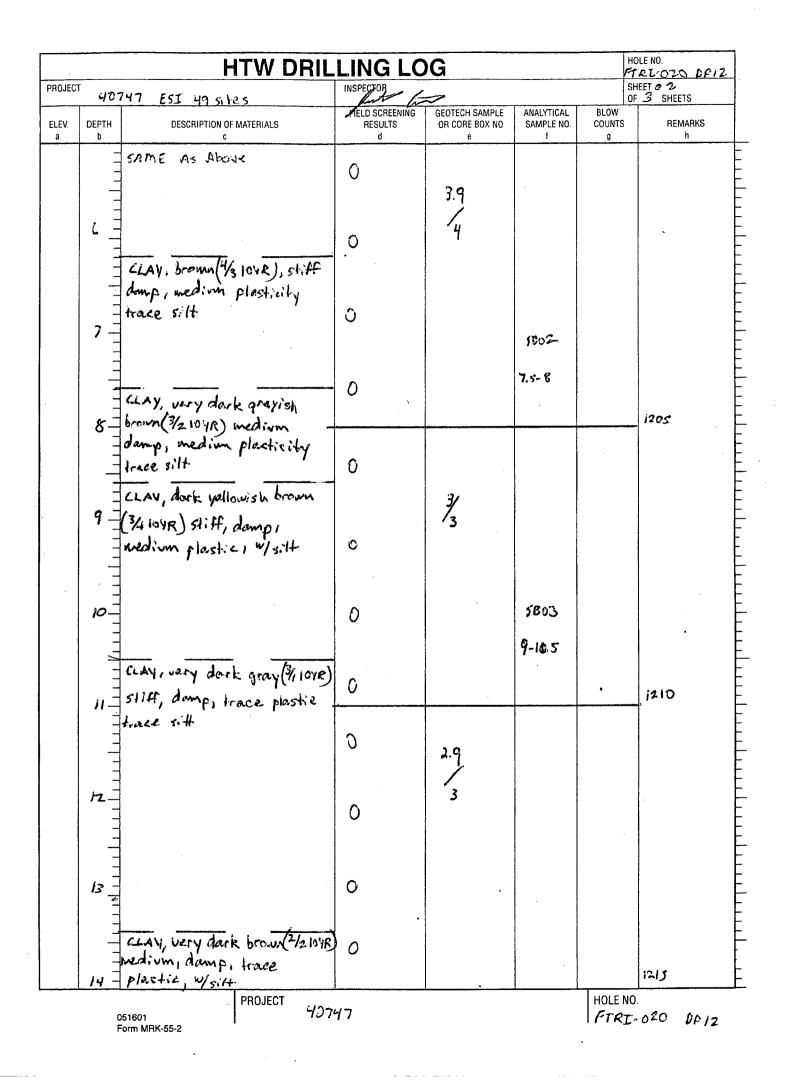
		HTW DRI	LING LC	)G		1	OLE NO. TRI-070 DPIL	
PROJECT	407	47 EST 49 siles	INSPECTOR	lant		SI	HEET 1 2 F 1 SHEETS	
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD/SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS h	
	6	SAME AS Abouz	0	1/4	580Z 6-7			
	7		0					
		(LAY, very dark prayish brown (3/210yR) sliff, damp					1030	
		hishly plastic	0	3,				
	°	CLAY, dark brown (33104R) medium, damp, hiskly plastic	Ö	3/3	<b>1B03</b>		-	
	10		0		9-5-10.5			
	       		0				1035	
			0	2.7				
	+2		0	27				
	13 	CLAY, very dart gray (3/1 10YR) Soft, dampi hied in plastici	- 0					بتتبت
		лисе <sub>(), М</sub> ,	0		-		ioro	
		D51601 PROJECT	947			HOLE NO	). 2026 OFII	

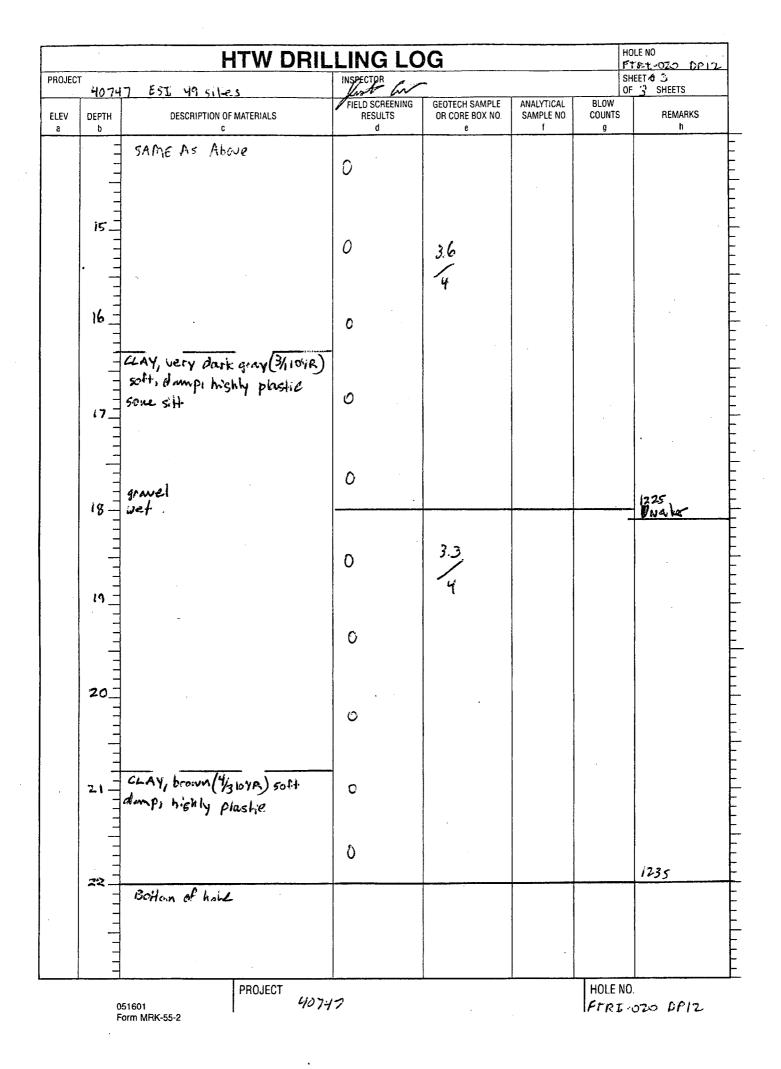




<u></u>			HTW D	RILLI	NG	LO	G		<u></u>		HOLE FT R1	NO. GOLO OPIZ
COMPAN	Y NAME			2. 1	DRILLING	SUBCONTR	ACTOR				SHEET	1
		15 & MeDens	1211	<u> </u>		ÊP					OF 3	SHEETS
PROJECT			0			4. LOCATI	on Fart R.L	2				
	F DRILLER	47 EST 1				6. MANUF	ACTURER'S DE	SIGNAT	TION OF DRILL			
NAME OF	DNILLEN	Erie Mert	noff					/ 0	lirect fu	sh		
	ID TYPES OF		oprola 5400			8 HOLE I						
AND SAN	IPLING EQUIF	PMENT y	macrocore				N A			·····		
						9. JUNEA	NA					
						10. DATE			1	1. DATE COMP		
							7/18/00			7/18/20	2	·
OVERB	URDEN THICH					15. DEPT	H GROUNDWA	ter en	COUNTERED			
	DRILLED INT	NA		<u></u>		16 DEPT		ND ELA	APSED TIME AFTE	R DRILLING CON	<b>IPLETED</b>	
DEPTH	URILLED IN IN	NA					JA_			· · · · · · · · · · · · · · · · · · ·		
TOTAL	DEPTH OF H	OLE				17. OTHE		el mea	Surements (Spe	CIFY)		
		18-1		11,054	STURBED				CORE BOXES			
GEOTE	CHNICAL SAM	APLES A	DISTURBED			, 19	0					
SAMPL	ES FOR CHE	MICAL ANALYSIS	voc	METAL		OTHEF	(SPECIFY)	ОТ	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORI RECOVERY
		3		3		-						RECOVERT %
Diebor	SITION OF HO		BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)		IGNATURE OF INS			<u>.</u>
. 013PUS		NA							to h			
		N 19	Bentonite	AL			GEOTECH S/		ANALYTICAL	BLOW	[	
LEV	DEPTH	DES	SCRIPTION OF MATERIALS			SULTS	OR CORE BO		SAMPLE NO.	COUNTS		REMARKS
a	Ь	Topsoil	C			d	e		f	g		
•		(IAV d	ark yellowish	brown								
					0		3.7					
		("4 104R)	slift, dmp, lie 7/silt				4		5801			
		non olas	lie Meith						1-2			
	/	r							FC			
	-				0							
	1 =											
	2				0							
		1			Ĭ						1	
		}										
	-											
	3_				10							
			hi yellowish l									
	=	(6/4 104R)	soft, damp; n	073			1					
		a lardia	trace clay									
	=	1 ·····s ··· · · · ·	the Ling		0				[		1200	<b>`</b>
	9									<b> </b>		-
	-	1			·					ļ	1	
	=	1 .										
					0							
	i -	1										
		r										

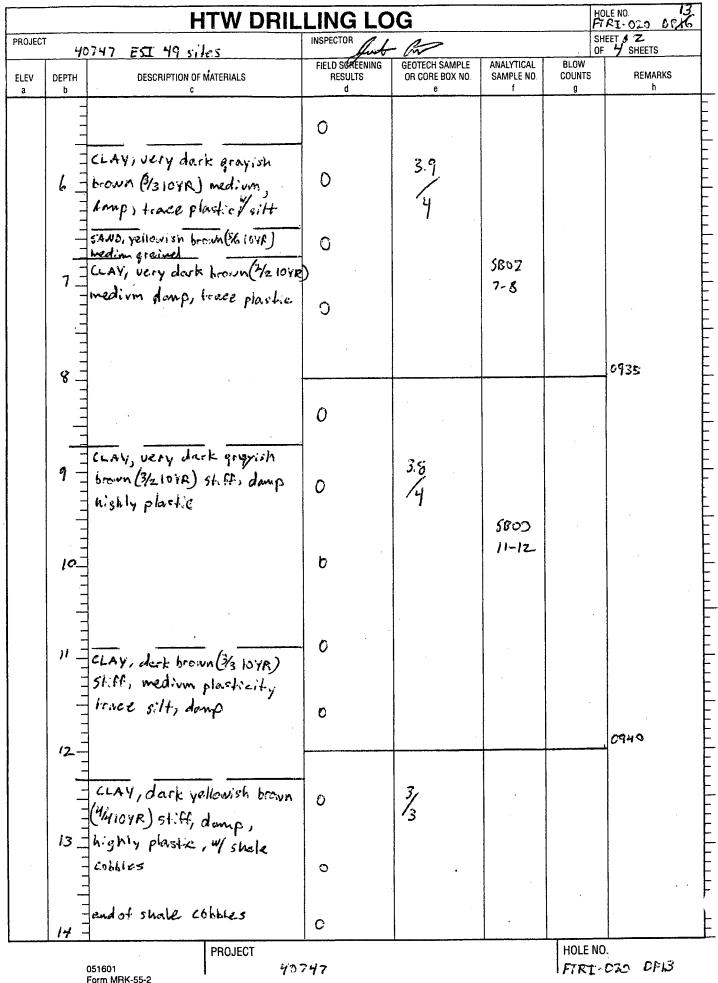
• • •

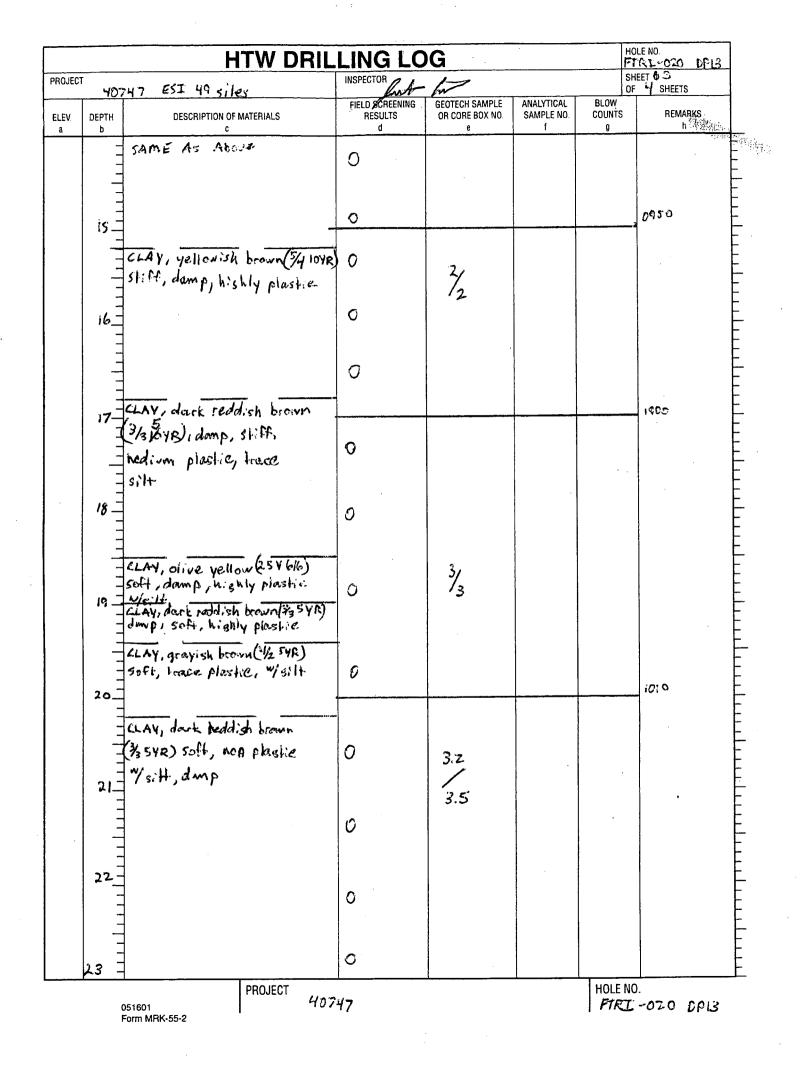




			HTW [	DRILL	ING	LO	G		<u></u>		HOLE	NO. 1-010 0P13
1. COMPA				2.	DRILLING	SUBCONT	RACTOR				SHEE	
PROJEC	T		MaDownell			4. LOCAT		3				
	<u>ې</u>	10747 1	IST 49 siles				Fori Ki	ley				
NAME C	)F DRILLER	Frie	Merinoff						TION OF DRILL Direct Pue	•6		
	ND TYPES O		Geoprole 5400			8. HOLE						
AND SA	Mpling Equ	IPMENT	4 macrocose				CE ELEVATION					
		F				9 JUNEA	い	•				
		ļ			· · · ·	10. DATE	STARTED 7/14	1.1		11. DATE COMP 7/14/6		
2 OVERE	BURDEN THIC	KNESS		<u> </u>		15 DEPT	H GROUNDWA			/////0		
			NA				N	A				
3. DEPTH	I DRILLED INT	TO ROCK	NA			16 DEPT	H TO WATER / N		APSED TIME AFTE	R DRILLING COM	APLETED	
4. TOTAL	DEPTH OF H	IOLE				17. OTHE			SUREMENTS (SP	ECIFY)		
	CUNON CI	MDLEO	30 DISTURBED		STURBED				CORE BOXES	· <u> </u>		
o GEOIL	ECHNICAL SA	MPLES S	DISTORBED C	UNDI C		, Is						
0 SAMPL	ES FOR CHE	MICAL ANALYSI	s voc	METAL	S	OTHER	(SPECIFY)	OT	HER (SPECIFY)	OTHER (SF	PECIFY)	21 TOTAL CORE RECOVERY
		3		3			<b></b>					%
	SITION OF H	DLE	BACKFILLED	MONITORING	WELL	OTHEF	(SPECIFY)					
. 1	NA		Bentonite	NA		N	A	A	stor for			
ELEV	DEPTH		DESCRIPTION OF MATERIALS			CREENING SULTS d	GEOTECH SA OR CORE BC e		ANALYTICAL SAMPLE NO f	BLOW COUNTS 9		REMARKS h
	-	Fill			<b> </b>							
	-				0			:				
			- <u></u>		4		3.3	:				
		CLAV, U	ery dark gray is	ih brown	1		<u>'</u>		sbol			
	/	72104R	ery dark gray is ) stiff. damp, w ity	edivm	0		'		1-2	•		
	_											
	-	CLAY, d	lark yellowish b	n wen								
	=	(14104R	) stift, demp, N	redirm	0	·			•			
	2	plastic	ity	-								
	=		•									
		1			0							
		]										
	3_											
	=											
					0							
	=	1										
	<u>u</u> =	1									0930	>
	/	]										
	=	1										
		1			0							
	c	1										
	<u> </u>	1	PROJECT	<u></u>	<b>I</b>		L		1	HOLE NO	I	,
RK [	FORM 55		4074	7						1	I . 070	DF 13

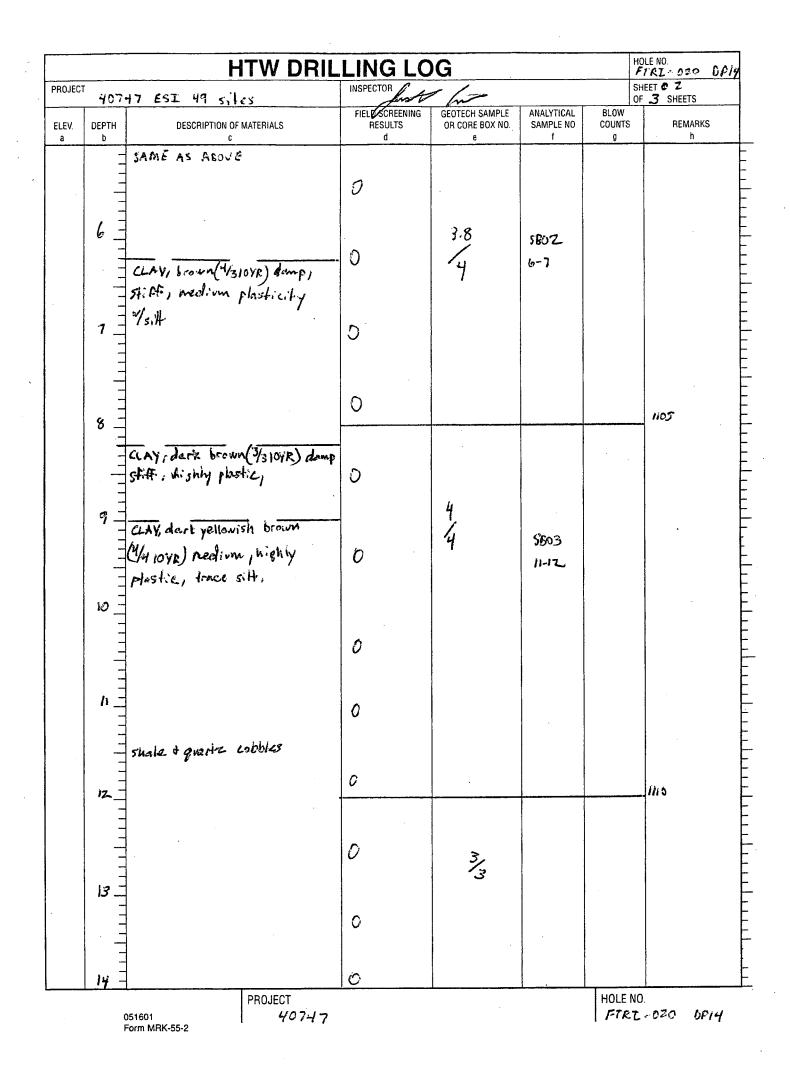
.





		HTW DRI	LLING LO	G			HOLE NO FTRI- 070 DP L
OJECT	40747	ESI 49 sites		- (~)			SHEET & H OF H SHEETS
.EV D	ЕРТН	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f.	BLOW COUNTS	
<u> </u>		light grayish brown \$2205 shift, non plastic, #silt					- 1020
	24		0				
			0	3.3 / 3.5			
			0				
	26						
	- (- 1/3 54 F = 1:02 1	dark reddish brown ) medium, domp. olastic Msilt					1030
	- CLAY	) d mp, stiff, non plashi	D c				
:	- Wisil+	•	0	3/3			
			0				
	-[7/3 \$Y	dark reddish brown A) stiff, domp, non c, Wsilt	0				
3		al Bettern of hole					1045
		al isotom or nore					
	31						

			HTW	DRILL	ING	LO	G			,	1		
COMPA				· · · · · · · · · · · · · · · · · · ·						<u></u>			
HTW DRILLING LOG         POLE           DELET         DELET         2 DELETS         PERSON         DELET         PERSON         DELET         DELET													
PROJE		- 517				4. LOCAT							
		1 632	475/145			E MAAILIE		FRICIN					
		frie Me	choff										
	ND TYPES O	F DRILLING	Beoploke 5409	5		8. HOLE L	OCATION						
ND S#	MPLING EQU	PMENT	4' macrocore										
				·				Ą					
									ŀ	11 DATE COM	PLETED		
		[				1				7/1310	<u>ب</u>		
OVER	Burden Thic					15. DEPTI		TER EN	COUNTERED				
DEPTI	DRILLED INT		Δ			16. DEPTI		AND EL	APSED TIME AFTE	R DRILLING CO	MPI FTFD		
			R				Ņ٨						
TOTAI	. Depth of H		°			17. OTHE		el mea	SUREMENTS (SPE	ECIFY)			
GEOT	CHNICAL SAL		·····	LIND		1			CORE POVES				
		~				19.			JUNE DUALD				
SAMP	ES FOR CHE	MICAL ANALYS	IS VOC	META	LS	OTHER	(SPECIFY)	OT	HER (SPECIFY)	OTHER (S	PECIFY)		
		3		3					_		_ ]		
DISPO	SITION OF HO	ILE	BACKFILLED	MONITORING	G WELL	OTHER	(SPECIFY)	23. 5	IGNATURE OF INS	SPECTOR			
	Ne		Reulanila	NA		1		1					
	<u>, , , , , , , , , , , , , , , , , , , </u>		- manue	1		CREENING	GENTECH C		· · · · · · · · · · · · · · · · · · ·				
	NY NAME BUT WE + MC DOWNALL T YO 747 EST 19 51125 F DRILLER Eric Merhoff IND TYPES OF DRILLING BURDEN THICKNESS NA I DRILLED INTO ROCK NA DEPTH OF HOLE I 8 ECHNICAL SAMPLES O ES FOR CHEMICAL ANALYSIS VOC 3 STION OF HOLE NA DEPTH DESCRIPTION OF MATERIALS CLAY, dart heave (3/3 ioyR), i Stiff, hishly plastic, trac Silt CLAV, very dart grayish brow Silt CLAV, very dart grayish brow Silt Silt CLAV, very dart grayish brow Silt Silt CLAV, very dart grayish brow Silt					SULTS	OR CORE BC		SAMPLE NO.	COUNTS	. F		
	·	Topsoil	1		1								
	7			,	0								
		CLAY, d	lark hrown (3/3 10)	(R), damp	ĺ		27		SRol			·	
	i	stiff, h	ishly plastic,	trace	10								
		s:1+			ľ		14		1-2				
			·										
					m								
	Z												
		CLAV. V.	erv dart oraviel	ham	1								
		3/2 1040	Stiff trapp -	lastic									
		Meill		ميا¥ ل.~ .	te .								
•		1717						ĺ					
								1					
	_				6								
	4 <u>-</u>										1400		
								1					
					0		:						



PROJEĊT			TW DRIL	LING LO	4		FI	LE NO. 121-020 6914 EET 63 3 SHEETS
ELEV.	HO DEPTH	747 EST 49 STH DESCRIPTION OF N		FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO	ANALYTICAL SAMPLE NO	BLOW COUNTS	3 SHEETS REMARKS
a	h	CLAY, very pale b: damp, soft, med:		D	e	f	g	h
	15	CLAY, dark reddis danp, medivm, plasticity, trace	trace	0				ji/2
		plasticulty) trace	si/t	0	24			
	d  			0	3/ 3/3			
	יי	CLAY, reddish br medium, medium drup, trace silt shale cobbies	ciun(4354P) plasticity; ; trace	0				
		Shall Cobbies Refused Botton		0			,	112)
	3 							•
							•	
			•					
		   .   .						
	(	051601 Form MRK-55-2	PROJECT <i>90747</i>				HOLE NO	-020 DP14

,

.

				RILL	ING	LO	G				HOLE	NO. I-020 DP15
COMPAN											SHEE	T 1
		+ Mabou	nell				EPS				OF 2	- SHEETS
PROJEC			40 ciles			4 LOCAT	ION Facil R.	iler	2			
NAME O							ACTURER'S DI	ESIGNA	tion of drill			
				·				1	irect for	sh		
					<del></del>	8. HOLE I						
ANU SAI	IPS 49 siles       Fort A:Ley       Inde OF DRILLER       Eric     March off       Eric     March off       Start of DRILLING     Gamp rote 2 from       Max of DRILLING     Max of DRILLING Rote Provide 11       Outer Bundles     Max of DRILLING Rote Provide 11       Max of DRILLING     Max of DRILLING Rote Provide 11       Outer Bundles     Max of DRILLING Rote Provide 11       Outer Bundles     Max of DRILLING Rote Prote Prote Prote Provide 11											

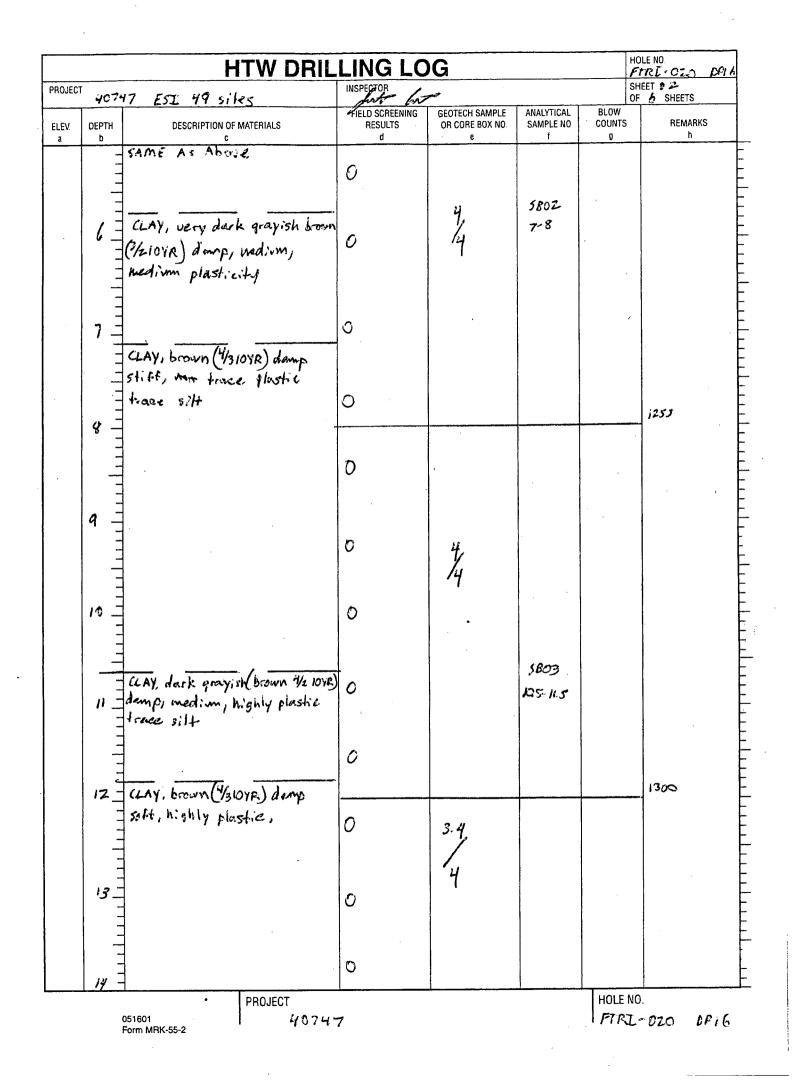
i.

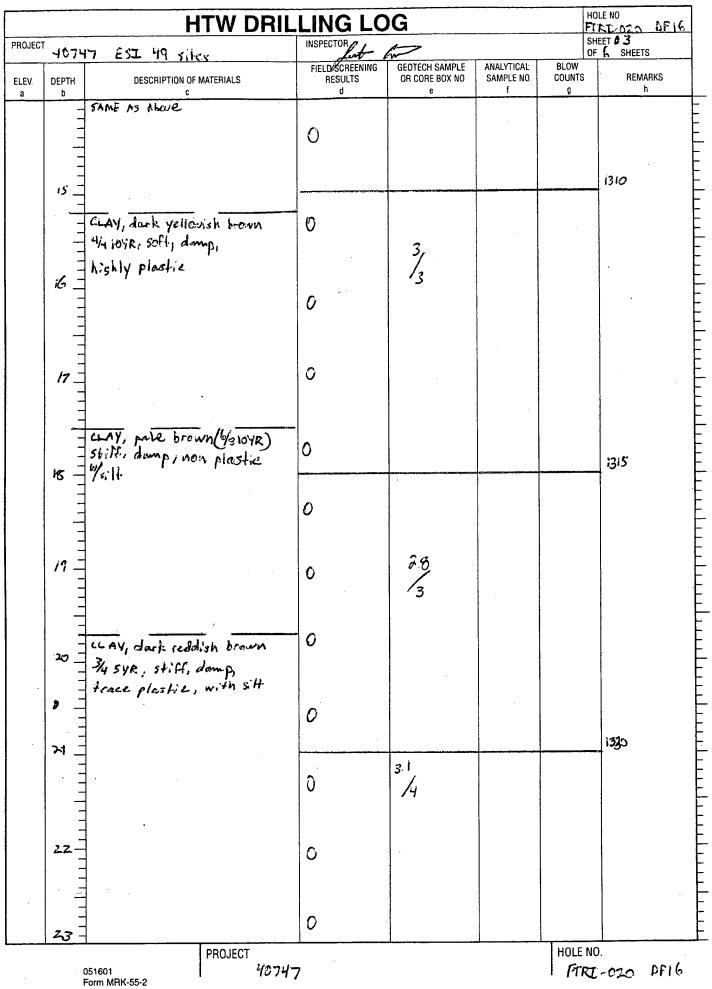
OJECT		HTW DRIL	INSPECTOR				FT-R1-020 61: SHEET \$ 2
	407	147 EPS 49 siles	frist	- Com			SHEET \$ 2 OF 2 SHEETS
LEV a	DEPTH	DESCRIPTION OF MATERIALS c	FIELD SEREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		rame as above	<u>^</u>				
			0				
				ц.			
			0	14	5602		
	6 -		0		7-8		
			-				
		CLAY, brown (4/210VR) Stiff					
	7	nedium plasticity, Wshale cobbles	0				
	-	cobbles					
		CLAV dack home Brings				·	
		CLAY, dark brown (7310YR) shiff, non plactic, damp					
	-	trace sitt	0				hso
	6 -						
			0				
			V				
				33, 3.5			
			6	3.5			
			U	11	5803 ·		
					io-11		
			6		10		
	0		• •				
		CLAY, reddish brown (44 SYR)			ļ		
		soft, dump, non plastice W/sitt, trace shall cobbles	0				
		small shall coulds					
			0				1155
	<u> </u> -]·	Refusal Better of mile					
	12	,					
						•	
	_						
	]					•	
,					<u> </u>		
		51601 PROJECT	747			HOLE	10. 1-020 OPIS

.

			HTW		ING	10	G				HOLE	
											PT'R' SHEET	1-020 DF16
COMPA	ny name	Burns + 1	Medannell	2		i SUBCONTF	ACTOR					SHEETS
PROJEC						4. LOCAT						
		8747 EST	49 sites				EPS	COLONIA	TION OF DRILL			
NAME C	of Driller	Erie Mar	ho ff.						rect. fush			
SIZES A	ND TYPES O		Renprola 540	<u>)</u>		8. HOLE		<u></u>	<u></u>			
AND SA	MPLING EQU		4" macrocore				NA					
							CE ELEVATION	1				
						10. DATE			1	1. DATE COM		
					_		7/13/01			7/13/	<u>ch</u>	
2. OVERI	BURDEN THIC	CKNESS				15. DEPT	H GROUNDWA 40.7	ter en	ICOUNTERED			
3. DEPTH	I DRILLED IN		<u> </u>			16. DEPT		AND EL/	APSED TIME AFTE	R DRILLING CO	MPLETED	
		NA				<b> </b>	NA					
4. TOTAL	. Depth of 1	HOLE				17. OTHE	R WATER LEV	EL MEA	SUREMENTS (SPE	CIFY)		
B. GEOTI	ECHNICAL SA		DISTURBED	UN	DISTURBED	) 19		BER OF	CORE BOXES			
		0	C		0		(	)		<del></del>		l
). Sampi		EMICAL ANALYSIS	VOC	MET	ALS	OTHEF	(SPECIFY)	10	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE RECOVERY
	3			3		<u> </u>						%
2. Dispó	SITION OF H	OLE	BACKFILLED	MONITORIN		OTHEF	(SPECIFY)		SIGNATURE OF INS			
	NĄ		Bentonite	Piezon	ster	#	<u>≁</u>	A	hot to			
ELEV.	DEPTH	DE	ESCRIPTION OF MATERIALS		FIELD S	CREENING SULTS d	GEOTECH S/ OR CORE BC		ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9		REMARKS h
8	-	<b>B</b> 'll		<u></u>	+	-						-
,	=				0				1.			F
		1		•			3.5		5801			E
	] =				_		4		1-2			Ē
	]	LLAY, UZA	ium plasticity	15ti <del>r</del> i •	0							Ē.
		CLAY bro	ivm plasticity MI, (4/3 10YR),	medium	-  <sup>•</sup>							F
	=	damp, hig	hly plastic	•			1					Ē
			11									E
					0						ł	E
	2	1			ľ							
	=	1										F
		]										E
	• =	1			0							F
	3_											<u> </u>
	=	1 .										F
	=	1										E
		-			0						1	E
	,	CLAY, Ver	y dark gray (37, wedium plassi:	IOVR)							1250	þ
	4	medium,	medium plast:	cviy,							1	F
	=	trace pil	+; dmp			•						· • •
		j			0							F
		1							- 1			
					ľ							F

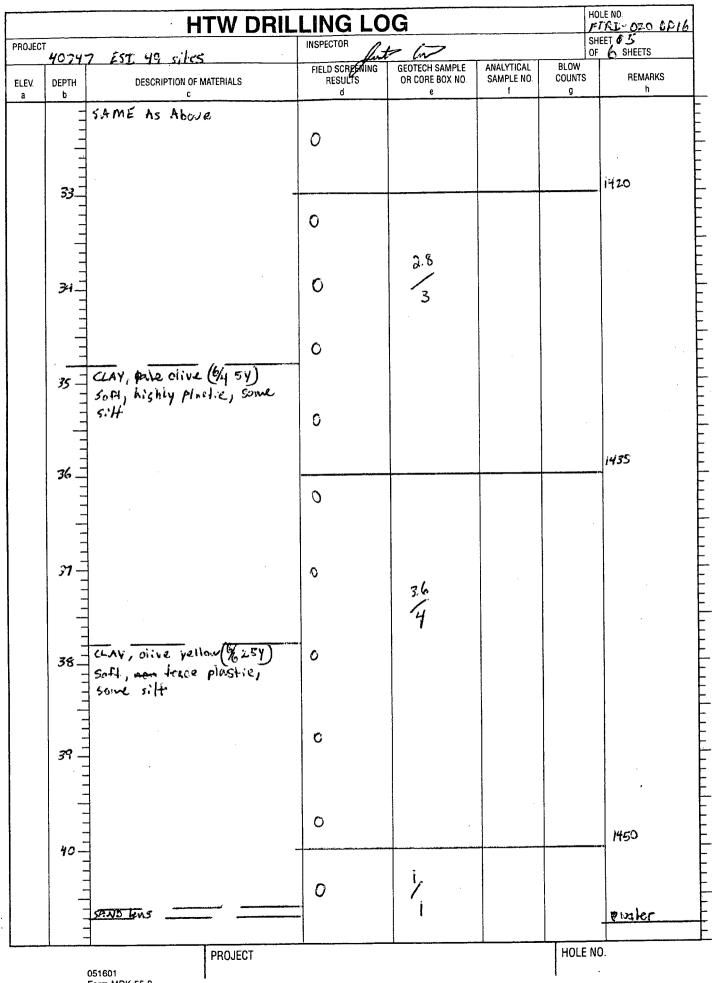
•





		HTW DRIL		G		H ح	OLE NO
PROJECT	40	747 ÉSI 49 siles	INSPECTOR	·		0	F 6 SHEETS
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS	FELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS Aboue	0	· · · · · · · · · · · · · · · · · · ·			
	74		0				
	75_	CLAY, light olive gray (9/254) Wedivun, medium plastic W/silt, damp And clay dark reddish brown 3/454R	0				1340
		dourk reddish broives 3/45YR	0	4			
	26-		0	14	•		
	27		<b>0</b>			,	
	28		0				
	79 -		0				1100
			0	3.1			
	30 -		c				
	- iC		0				
	32		0				
L	132	コート・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	" <u>I, ", ", ", ", "</u> , ", ", ", ", ", ", ", ", ", ", ", ", ",		<u> </u>	HOLE N FIRI	10. - 020 DF16

-



Form MRK-55-2

\_

		HT	<b>W DRIL</b>	LING LC	G		HC F	LE NO. 7AT - ODO DP EET & L SHEETS	6
PROJEC	<sup>1</sup> 407	47 ESI 49 siles		INSPECTOR	62		SH OF	EET & L L SHEETS	
ELEV. a	DEPTH	DESCRIPTION OF MATER		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS - g	REMARKS h	
		CLAY, Yellow (76254) Soft, highly plastic, + Slat	) wet w/smud	ð					
	41 -	Refusal						1505	
		Set kemporary pie: Bollow of hole	compler						
		Bollow of hole							
				, ,					
		- -					•		
		051601 PR(	DJECT				HOLE NO		
		051601 [ Form MRK-55-2	40747				FTRI	-020 OF16	

•

			HTW I	ORILL	ING	i LO	G				HOLE	NO. TRE-520 DPI
COMPAN				2	DRILLING	SUBCONT			<u></u>	<u> </u>	SHEE	T 1
DDO IS O		ions o Mel	Donneli	l		4 LOCA		<u>دی</u>	<u> </u>		LOF 2	SHEETS
PROJEC		IT EST	40 siles			4 LUUA	Fast	R'lon	.)			
NAME O	F DRILLER					6. MANU	FACTURER'S D	ESIGNA	TION OF DRILL			
		Eric Mi	· · · · · · · · · · · · · · · · · · ·				AT 1	<u>eo e</u>	iche / Dire	et froh		
	ND TYPES OF		Geoprole 5400			8. HOLE	LOCATION	•				
AND SAN	NPUNG EQUI		1' macrocore			9 SHRE	NA ACE ELEVATION	<u>-</u>	. <u></u>			
		-					NA					
						10 DATE	STARTED			11. DATE COMP		
							7/13/06			7/13)	56	
OVERB	Urden Thic	KNESS				15. DEP1	ih groundwa , <b>N</b> A;	ter en	COUNTERED			
DEPTH	DRILLED INT					16. DEP	في من المحد المراجع	ND EL	APSED TIME AFTE	R DRILLING COM	PLETED	
		NА					NA					
TOTAL	depth of h	ole کړ				17. OTH		EL MEA	SUREMENTS (SP	ECIFY)		
05075				1000			NA TOTAL NUMI		CORE BOVES			
GEOTE	CHNICAL SAI		DISTURBED	1	STUHBED O			ser of D	VUNE BUXES			
). Sampli		MICAL ANALYSIS	VOC	METAL		OTHE	R (SPECIFY)	ř –	HER (SPECIFY)	OTHER (SP	ECIFY)	21. TOTAL COR
		2		2		_						RECOVERY %
	SITION OF HO		BACKFILLED		WELL	OTHE	R (SPECIFY)	23 9		SPECTOR		J
. 00703	NA	·		AU	· · · · · · · · · · · · · · · · · · ·	1	VA		to la	-		
	2477		Benteaile	NA1		<u> </u>		Į į				<u>.                                    </u>
ELEV	DEPTH	D	ESCRIPTION OF MATERIALS			CREENING SULTS	GEOTECH SA OR CORE BO		ANALYTICAL SAMPLE NO.	BLOW COUNTS		REMARKS
a	b		Ċ			d	e		f	9		h
	-	City, do	ist, medium,	OYR								
	-	damp, st	: ff, medium,	olasticity	0							
	11	CLAY, de	rk yellowish b ) downp, stiff,	rown			35					
	1	(16104R)	downpy stiff.		0		3.5		SROL			
	11				l V		14		5BO1 1-2			
	11	•	plasticity, th	:\C.#~					1-2			
		silt							ŕ			
					0							
1	2									4		
	11											
	1			•								
	-											
					0							
	3											
							1					
					0							
											0825	
	4						1				1000	
							1.1					
:							/					
					0		12					
	5 -											

• • •

		HTWI	DRIL	LING LC	G		H(	dle no <u>7RT-020 BM</u> Heet <b>0</b> 2,
ROJECT	4074	7 EST 49 sites		INSPECTOR	- from		OF	LEET # 2. 2. SHEETS
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		Э		SBOZ		
						5-6		
	6 =	weathered hedrock		0			1944-196-99-99-194-194-194-194-194-194-194-194-1	C\$30
		Refusel Bettern of hohe				•		
		· .						•
	-							
	_							
	. 1						•	
	-							
	-		. <u>.</u>					
			•					
	-							
	· –							
	_				_			
						•		
		· · · · · · · · · · · · · · · · · · ·						
								i i
		PROJECT		<u> </u>	<u> </u>		HOLE NO	<u> </u>
	0	51601 4	10747				FTRI	- 020 DF17

L.

		HTW C	RILL	ING	LO	G	•			HOLE FTR	NO 1-020 DP20
Y NAME		N 41	2.	DRILLING	SUBCONTR					SHEE	
501	ns r mel	UGRACI	l			ION					
	ESI 49	sites				Fort R	iley				
DRILLER	تا بعد ، مد	<b>CF</b>			6. MANUF	ACTURER'S DI	SIGNA	TION OF DRILL			
	DOILLING C	ntt.		<u></u>			14:	-244 TV31	<u>^</u>		
					9. SURFA	CE ELEVATION					
								T			
			<del></del>		10. DATE		1				
IRDEN THICK	(NESS	· · · · · · · · · · · · · · · · · · ·			15 DEPT			COUNTERED		<u></u>	,,,,_,_,,_,,,,,,,,,,,,,,,,
	4					N۸		·	<u>.                                    </u>		<u> </u>
ORILLED INTO					16 DEPT	H TO WATER A እ⁄ ዲ	ND EL/	APSED TIME AFTE	R DRILLING CON	IPLETED	
DEPTH OF H					17 OTHE		el mea	SUREMENTS (SP	ECIFY)		
	IPLES	DISTURBED	1		19	TOTAL NUM	BER OF	CORE BOXES			
							01	HER (SPECIFY)	OTHER (SF	ECIFY	21. TOTAL CORE
.a run unei I	WAL ANALI 00	****	2	~			ļ				RECOVERY
											%
	LE	BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)	23. S	~			
NA		Bentonite	NA		N	ł		and on			
DEPTH	DES	CRIPTION OF MATERIALS			SULTS	OR CORE BO		ANALYTICAL SAMPLE NO	BLOW COUNTS		REMARKS
~ * * * * *	CLAY, very stiff, dam LLAY, very soft, nedit	dark brown (3/2 p wedium pla pare brown (3/21) m plastic, dam hedrock	-104R) skie D4R) P	0 0 0	· · · · · · · · · · · · · · · · · · ·	3.7 4		5B02 1-2		15635	_
	BUT HOTH DTYPES OF PLING EQUIF RDEN THICH RDEN THICH RDEN THICH RDENTHICH SFOR CHEI TION OF HO NA DEPTH B C C C C C C C C C C C C C	BUINT Y Mel 40747 EST 49 DRILLER Eric Marin DTYPES OF DRILLING PLING EQUIPMENT 40 RDEN THICKNESS 4 RDEN THICKNESS 4	INAME          BUTATINE       MEDGENELIN         40747       EST. 49 sites         DRILLER       Erie Marinaff         DOTYPES OF DRILLING       Geapreise 5400         DEVING EQUIPMENT       4' Maerocore         HILED INTO ROCK       4'         PRILLED INTO ROCK       NA         DEPTH OF HOLE       4'         HNICAL SAMPLES       DISTURBED         O       SFOR CHEMICAL ANALYSIS       VOC         I	(NAME       BUTATIN     PAREDUNCLI     2       40747     ESE 49 sites     1       DRULER     Eric Marhaff     1       DIVPES OF DRULING     Geapreiz 5400       PUING EQUIPMENT     4' Maere core       HILED INTO ROCK     NA       PEPTH OF HOLE     4       HARCAL SAMPLES     DISTURBED       UND     O       O     O       SFOR CHEMICAL ANALYSIS     VOC       MARTIN     I       I     I	INAME     2 DRILLING       BOTH I EST I HIGHLING     2 DRILLING       HOTH I EST HIGHLING     Genpreiz Stoc       DIVES OF DRILLING     Genpreiz Stoc       PUNG EQUIPMENT     HIGHLING       HILLED INTO ROCK     HA       REPTH OF HOLE     H       HINGAL SAMPLES     DISTURBED       UNDISTURBED     UNDISTURBED       OS FOR CHEMICAL ANALYSIS     VOC       MA     Bentenite       NA     Bentenite       DEPTH     DESCRIPTION OF MATERIALS       I     I       DEPTH     DESCRIPTION OF MATERIALS       CLAN, dark yeliawish brown(Hig 10)R)     O       Hadivm, kighty plastic, damp     O       I     I       I     O       CLAN, very dark brown (Hissi'e     O       I     I       I     O       I     I       I     O       I     I       I     O       I     I       I     I       I     I       I     O       I     I       I     I       I     I       I     I       I     I       I     I       I     I	INME       2 DRILLING SUBCONT $40747$ $EST$ $402600000000000000000000000000000000000$	B: $M^2$ is MEDIANALIEFS40747 EST 49 sites4 LOCATIONDRILEREric MarchaftDRILEREric MarchaftDRILERGeoproteEric MarchaftSeproteDITUPES OF DRILINGGeoprote4 Magerceore8 HOLE LOCATION4 Magerceore9 SURFACE ELEVATION4 Magerceore9 SURFACE ELEVATION5 FOR CHEMICAL ANALYSISVOC4 HINCAL SAMPLESDISTURBED0 O05 FOR CHEMICAL ANALYSISVOC1-<	NAME       2       DRILING SUBCONTRACTOR       EFS         40747       ESIL 49       sites       4       LOCATION         40747       ESIL 49       sites       4       LOCATION         07107       ESIL 49       sites       6       MANUFACTURERS DESIGNA         07107       Esite Marchaft       6       MANUFACTURERS DESIGNA       Geoprete       14         07107       Marchaft       0       SUBFACE ELEVATION       MA       Geoprete       14         0       SUBFACE ELEVATION       MA       9       SUBFACE ELEVATION       MA         10       DATE STATTED       7/13/06       15       DEPTH GRONOWATER EN       MA         9       SUBFACE ELEVATION       MA       16       DEPTH GRONOWATER EN       MA         9       FIELD MARCH ANALYSIS       VOC       METALS       OTHER WATER LEVEL MAR         10       DATE STATTED       17       OTHER WATER LEVEL MAR       MA         10       DATE STATTED       0       0       0       0         110       DATE STATTED       17       OTHER WATER LEVEL MAR       MA         110       DATE STATTED       0       0       0         110       DATE S	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	INNEE     2     DIRLING SUBCONTRACTOR     SHE       40747     EST     40 control     EFS     001       40747     EST     40 control     EFS     001       40747     EST     40 control     Forth R (By)       001LER     6     Marketriters bestonting of one       Eric Marchaft     6     Marketriters bestonting of one       DTPES of DRILING     CapproLe     5705       10     Date states     10     Date states       11     Date states     11     Date control       12     MA     10     Date states       13     Der Information Brookinstate Brookinstates     11.0 are completed       14     Marchaet and Landstates     11.0 are completed       14     Date states     11.0 are completed       15     Der Information Brookinstates     21.2 area       16     Date states     11.0 area       17.13 / ob     11.0 area     11.0 area       10     Date states     0.0 area       10     Date states     0.0 area       10     Date states     0.0 area       10

			HTW C	RILL	ING	i LO	G				HOLE	no. 12-02-0 DP18
COMPAN				2.	DRILLING	SUBCONTI	RACTOR	PS			SHEE	r 1 L Sheets
PROJEC		ms t Mel	)onell	l		4. LOCAT		r <u>s</u>				SHEETS
rhoulo		17 ESI	49 silves				End Rile					····
NAME O	F DRILLER								TION OF DRILL			
01750 41	ND TYPES OF		Merholf Geografie 5400			8 HOLE		.70	irect Pus	<u>h</u>		
	MPLING EQUI		4' malfocole			o note	NA					
		-				9 SURFA	CE ELEVATION	1				
							NA					
						10. DATE	STARTED	310	. 1	11. DATE COMP 7/13/0		
2 OVERB	URDEN THICI	(NESS				15. DEPT	H GROUNDWA			11310	<u> </u>	· · · · · · · · · · · · · · · · · · ·
		ל	• • • • • • • • • • • • • • • • • • •				A N					
3. depth	DRILLED INT					16. DEPT		ND EL	APSED TIME AFTE	R DRILLING COI	MPLETED	
		NA	<u> </u>			17 OTH			SUREMENTS (SPI			
4 IUIAL	depth of H	7					JA					<u></u>
8. GEOTE	CHNICAL SA	MPLES	DISTURBED		STURBED	19			CORE BOXES			
		0	0	METAL	0					OTHER (SI		21. TOTAL CORE
0. sampl		MICAL ANALYSIS	VOC		.5		(SPECIFY)		HER (SPECIFY)			RECOVERY
	2	-		2					······			%
2 DISPOS	SITION OF HO	LE	BACKFILLED	MONITORING	6 WELL	OTHEF	(SPECIFY)	23. 5				
	N	£	Bentanite	NA		J.	A	A	hot h			•
ELEV.	DEPTH		DESCRIPTION OF MATERIALS			CREENING SULTS	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO f	BLOW COUNTS 9		REMARKS
		CLAY, b!	10WM (4/3104R) we	Jium			1					
		medium	plasticity, trace	grass	0							
		<u>coots</u>		· · · · ·			~ ~		<i>s</i> eo1			
	· 1	CLAY, yel	liowish brewn (5/8	ICYR)			3.3					
	,	stift; me	edium plasticity	1			4		0-2			
		trace si	1+		0							
	2_				0							
			•									
					0							
	3											
	3										· ·	
					0							
											0855	<u>.</u>
	4											
							1				1	
					0							
	5 =	1 6										
	La construction of the second		PROJECT						·	HOLE NO	A	

PROJECT         HOLECT         Instruction         Issue of a status         Issue of a status <thissue a="" of="" status<="" th="">         Issue of a status<th></th><th></th><th>ŀ</th><th>ITW DRIL</th><th>LING LC</th><th>)G</th><th></th><th>HO F</th><th>DLENO. TRE-020 6013</th><th>]</th></thissue>			ŀ	ITW DRIL	LING LC	)G		HO F	DLENO. TRE-020 6013	]
LLE         DEFIN         DESCRIPTION OF MATERNUS         PELE DESCRIPTION         CEUTING         SOUTH COM         AMARE NO         COM IS         SOUTH COM         AMARE NO         COM IS	PROJEC	т 4074			INSPECTOR for	lin		SI	HEET <b>8</b> 2 • 2 Sheets	
		DEPTH	DESCRIPTION OF		FIELD SOREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	SAMPLE NO	BLOW COUNTS	REMARKS	
			SAME AS Abou	٤	Ð	3ŗ				
		6			0	/3	6-7			
			weathered Aver	ačis —	0				8 <b>9</b> 00	
		· · · · · · · · · · · · · · · · · · ·								
		^	51601	PROJECT						

747 7

.

04

		,	HTW	DRILL	ING	LO	G				HOLE N	vo. -020 DAN
COMPA	NY NAME	Rine -	McBanall	2.	DRILLING	SUBCONT	RACTOR				SHEET	
PROJEC					· · · · ·	4 LOCAT	ION				101 2	SHEETO
		7 £SI -	19 siles				FOIL RIL					
NAME C	of Driller	Eric Mi	choff.						ect fusl	4		
SIZES A	ND TYPES O		Geoprole 5400	· · · · · · · · · · · · · · · · · · ·		8 HOLE			<u></u>	<u></u>		
AND SA	MPLING EQU	IPMENT	Y' macin core									
						19 SUHFA						
						10. DATE	STARTED		T	11. DATE COMP	-	
			•	<u></u>		45 8587	7/13/06			7/13/0	6	
2. OVERE	BURDEN THIC	KNESS 7, 5	•			15 DEPT	H GROUNDWA NA	IER EN	COUNTERED			
B. DEPTH	I DRILLED INT	O ROCK	-	<u> </u>		16 DEPT	H TO WATER	ND EL/	APSED TIME AFTE	R DRILLING CO	MPLETED	<u> </u>
		NA				47.011	NA D WATER LEV					
I. TOTAL	. Depth of H	10LE 7,5						EL MEA	SUREMENTS (SPI			
3. GEOTE	ECHNICAL SA	-	DISTURBED		ISTURBED	19	TOTAL NUM	BER OF	CORE BOXES			·····
		D	VOC	T	<u>D</u>		(SPECIFY)	0.1	HER (SPECIFY)	OTHER (S		21. TOTAL CORE
J. SAMPL		MICAL ANALYSIS Z	V	META								RECOVERY
											-	%
2. DISPOS	SITION OF HO		BACKFILLED	MONITORIN	G WELL		(SPECIFY)					
	,	J.A.	Bentonite	AU	- <u>1</u>	1	/ Ą		not for		·	<u></u>
ELEV. a	DEPTH		DESCRIPTION OF MATERIALS			CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO f	BLOW COUNTS g	R	EMARKS
		CLAY, 6	rown(1/3(10YR)	incolivm								<u> </u>
	=	medium	plasticity, damp	3	0							
		CLAY ; de	urk yellowish b	cown								
		(3/410YR)	medium, med	lium			3.7					
	1-	Plastici	plasticity, damp		0							
	=		/				7		SBOI			
	-								o-1			
	-											
		1										
					0							
	Z	х. Х			0							
	Z				0							
					0							
·	2				0							
	3											
	3											
	3											
	3		•		0							
			•								<i>OA</i> 45	
	3		•		0						0945	
					0						0945	
				1	0						<i>0</i> 945	
		CLAY, da Soct. his	-k yellowish bro hly plastic, dm	1. vort 44 10%	0						0945	

.

		HTW DR	ILLING LC	)G		H F	OLE NO.
PROJEC	T 407	147 ESE 49 siles	INSPECTOR	- fu		SI	HEET 0 2 F Z SHEETS
ELEV.	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMAR h
		SAME As Above					
			0	3,3,	SEOZ		
				3.3	6-7		
	6 -						
			O O				
	7		-0				
		weathered bedrock					0950
		Bottom of how					
						·	
		. ·		•			
						-	
				•			
	-						
						л Т	
1							

.

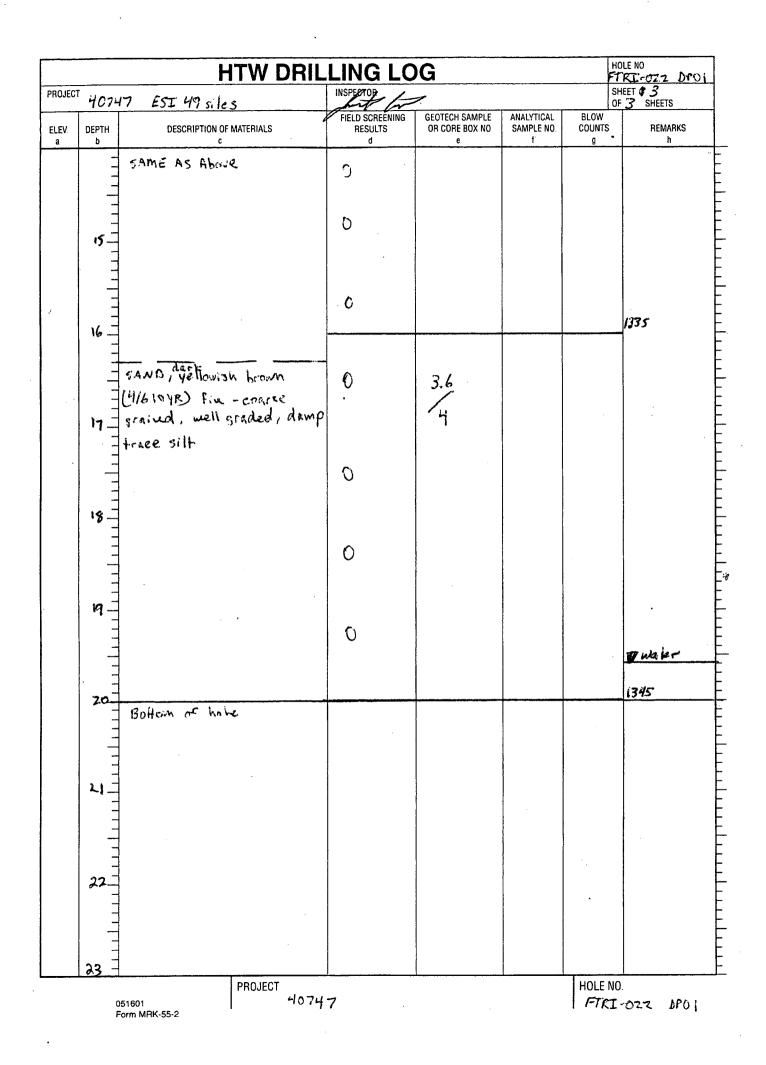
•

		-	HTW I	DRILL	ING	i LO	G				HOLE FTE	NO. 1-020 DP20
COMPAN	NY NAME			2.	DRILLING	SUBCONTR					SHEET	٢ 1
000150		ma r Mel	Quintly	I		4. LOCAT	<u>293</u> NON				OF	SHEETS
PROJEC		7 ESI 49	sites				Fort R	iley	<i>:</i>			
NAME O	FDRILLER						ACTURER'S D	ESIGNA	TION OF DRILL			
		Erie Marh	off.					14)	reat First	n		
	ND TYPES OF		enprobe 5400			8. HOLE I						
AND SAI	MPLING EQUI		maerecore			9 SURFA	NA CE ELEVATION	1				
			<u></u>				ЛЛ					
						10. DATE		•		11. DATE COMP		
						46 0507	7/13/06	_		7/13/	06	
2. Overe	BURDEN THICI	KNESS 4				15 DEPI	H GROUNDWA	IEK EN	ICOUNTERED			
3 DEPTH	DRILLED INT					16 DEPT		AND EL	APSED TIME AFTE	R DRILLING CON	APLETED	
		NA					NĄ					
4. TOTAL	DEPTH OF H	ole y				17 OTHE		el mea	SUREMENTS (SP	ECIFY)		
	0.0000000000000000000000000000000000000		DISTURBED		STURBED				CORE BOXES			
B. GEOTE	CHNICAL SAI	NILE9				, . 19			JUNE DUAED			
D. SAMPL		MICAL ANALYSIS	VOC	METAL		OTHER	(SPECIFY)	OT	HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL CORE
	i			i		_						RECOVERY %
	SITION OF HO	N E	BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)	23 5	SIGNATURE OF IN	SPECTOR		L
2. 013903	SHON OF HC				r ***aaaa	<u> </u>			how the			
	, v <sub>F</sub> (		Bentonite	NA	<del></del>	N						
ELEV.	DEPTH	DES	CRIPTION OF MATERIALS			SCREENING SULTS	GEOTECH SA		ANALYTICAL SAMPLE NO	BLOW COUNTS		REMARKS
a a	b		C			d	e		f	g		h
	_	CLAN, dark h	(CWM (2/3 10YR) S	oft, damp								
	-	Medium PE	yellowish tronv ighly plastic,	(History)	0							
		Charg, dork	yellowish man									
		made my h	igny plastic,	p m p								
					0		<i>3.</i> 7		SBOZ			
	<u>-</u>		dark brown (3)	(INVE)	1		1		1-2			
		CLIFA J	ALL BOOMAL	40/10/			4					
		stitt ann	p medium pl	2.54.6								
	2 -				0							
	1											4
		LLAY, Very	pale brown (3/2)	DYR)	0							
	3		m plastic, dan	74								
	-	weathered	Ledrock									_
	=											
	-											
	-				0		1				1005	
	4	Refusal	Bettom of he	al <i>a</i>				<u></u>	+			
	=	NETVIEN	ALLCON QL NO	, * bo- 44					1		1	
	=				1					l		
	=								1			

Boring Logs Camp Funston WWTP Sludge Drying Beds (FTRI-022)

			HTW [	DRILL	ING	i LO	G				HOLE	NO. E-CZZ DI	
1. COMPA	NY NAME	<u> </u>		2.		SUBCONT	RACTOR				SHEE	Г Ф <sup>1</sup>	<u> </u>
, 		is 4 Medon	nell			EPS 4. LOCAT					OF	7 SHEETS	4
3. PROJEC		147 <u>ESt</u>	49 siles			4. LOUAI	Fort Ril	en					
5 NAME O	F DRILLER			<b>C</b> D		1	ACTURER'S D	ESIGN/	TION OF DRILL				
- 0/750 A		unis Elier	Erie Merh	04			LOCATION	<u>/ D;</u>	rect fusl	<u>~</u>		<u> </u>	-
	nd types of Mpling Equi	PMENT	Reppiela 4200 41 mairocore				NA						
						9. SURFA	CE ELEVATION	I					
			······································				NA STARTED		I	11 DATE COMP			-
							7/10/06			2/10/0k		·	
12 OVERE	BURDEN THIC	KNESS NA			-	15. DEPT	H GROUNDWA	ter en	COUNTERED				
13. DEPTH	DRILLED INT	OROCK				16. DEPT	H TO WATER	ND EL	APSED TIME AFT	ER DRILLING COM	MPLETED		
	DEPTH OF H		· · · · · · · · · · · · · · · · · · ·			17 OTHE		EL ME	ASUREMENTS (SP	ECIEY)			_
14. 101AL		20	<b></b>				NA			2011)			_
18 GEOTE	CHNICAL SA	MPLES	DISTURBED	UNDI	STURBED )	) 19	. TOTAL NUM 0	Ber of	CORE BOXES	,			
20. SAMPL	X	MICAL ANALYSIS	VOC	METAL	-	OTHER	(SPECIFY)	01	THER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CO	
	3		-	3						-		RECOVERY %	′
22. DISPO	SITION OF H	DLE	BACKFILLED	MONITORING	WELL	OTHEF	(SPECIFY)	23.	SIGNATURE OF IN			• · · · · · · · · · · · · · · · · · · ·	1
	NA		Bentouite	NA		٨	VIA .	A	lot a				
ELEV.	DEPTH b	DES	SCRIPTION OF MATERIALS			CREENING SULTS	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO	BLOW COUNTS 9		REMARKS	
·	-	CLAY, Ver	y dark grayish	biown						, ,			E
			soft, medium		0				SBOI				E
		damp 4	grass roots						0-1				F
	-	CLAY; very	y derk brown (	42104E)									F
		medium,	y derk brown ( medium pless	k. ≤ 3	0								F
	=	damp, to	ace silt								:		F
											. '		F
		SILT, heo	wn (5/3 104R)	\$6Ft-	0		22						E
	2-		tic, some som	d			4						<u> </u>
		brace sli	ay, domp				7						E
		:											F
					0	·					•		F
	3	-								ria.			E
	<b>_</b>												F
					0								E
													E
										1	1310		F
	4										1010		F
							1						E
					δ								F
												`	F
	5 -									HOLE NO.		<u></u>	_ <b>L</b> _
MRK ူ			юјест 4074 <sup>-</sup>	7							-07.2	DPOI	

ROJECT	407+	HTW DRIL 17 ESI 49 siles	INSPECTOR	)G		[	HOLE NO <u>FTET-022 DPOI</u> SHEET 2 OF 3 SHEETS
	EPTH b	DESCRIPTION OF MATERIALS	FELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
		SAME AS Above SAME	D				
	61111		0	3/4			
	7		0				
	111111		0		5802 7-8		
•	8 1 1 1 1 1	SAND, pale brown (4310)R 1005e, five grained, damp trace silt, poorly graded	0				1315
	9 1111	-	0	3.1			÷8,
	10		0		5803		
			0	-	8-12		
			¢.				1325
		SAND, yellowish brown	0	3.8			
	13 _	(5/410VIR) file-coarse grained well graded	0	4			
	1111 14	d om p	0				

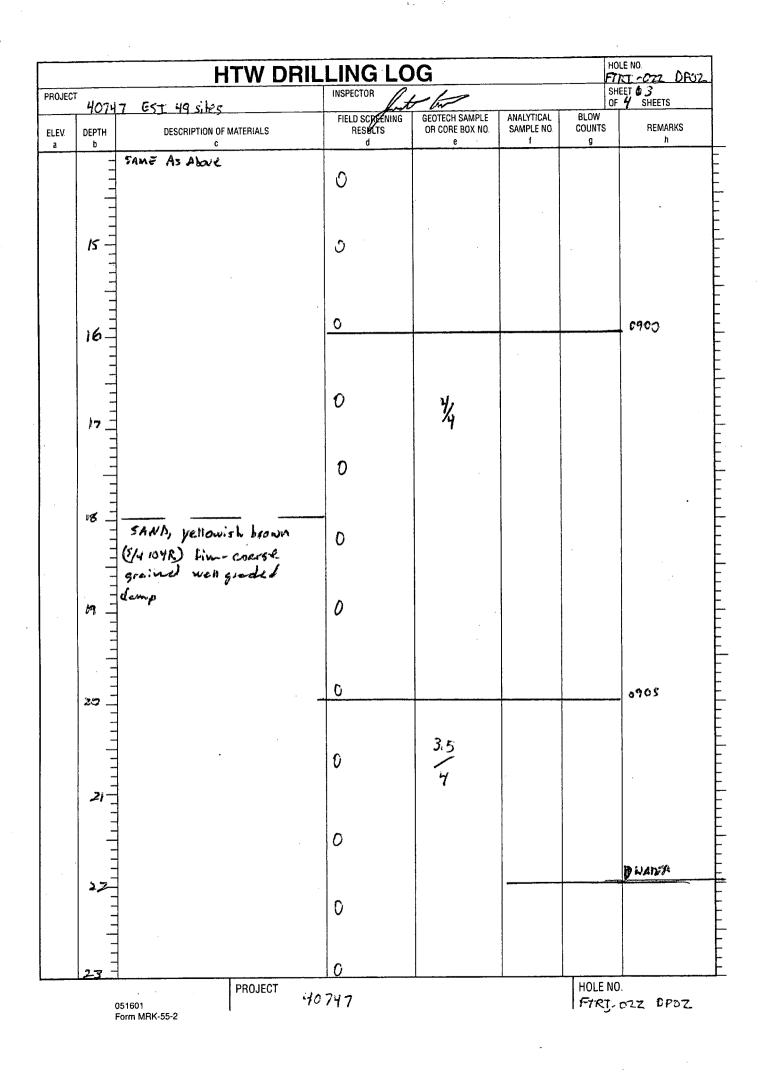


		<u>.</u>		RILLI	NG	LO	G				HOLE	NO. I-022 NPD
COMPAN		<u></u>		2. [	RILLING	SUBCONTR					SHEET	1
	Bur	s & Mel	Jonnell			4. LOCATI	EPS				OF 4	SHEETS
B. PROJECT	r L	10747	ESI 49 siles					L.V.	TION OF DRILL			
. NAME OF				1 00		6. MANUF	ACTURER'S DE	ESIGNA		1		
			lor / Eric Mer	hoff		8 HOLE I	OCATION	<u>/ D</u>	ireet Pus	h		
	ND TYPES OF		Geoprale 4200 4' maerocore				NA					
1110 010			T MULLINGOTE			9. SURFA	CE ELEVATION	I				
							<u>NA</u>		T.	1. DATE COMP		
						10. DATE	7/10/0	06		7/10/d		
2 OVERB	URDEN THICI	(NESS				15 DEPT	H GROUNDWA		COUNTERED			
		NA					93					<u> </u>
3 DEPTH	DRILLED INT	-				16. DEPT	+ to water مريد	and elj	APSED TIME AFTE	R DRILLING COM	APLETED	
	DEPTH OF H					17. OTHE		EL MEA	SUREMENTS (SPE	CIFY)		
		<u>24'</u>				<u> </u>	NA			<u></u>		<u></u>
8. GEOTE	CHNICAL SAI	WPLES	DISTURBED	1		) 19	TOTAL NUMI	BER OF	CORE BOXES			
	ES FOR CHE	MICAL ANALYSIS		METAL	·	OTHER	(SPECIFY)	ОТ	HER (SPECIFY)	OTHER (SI	PECIFY)	21. TOTAL CORE
.u. unmrt		3		3							_	RECOVERY %
			BACKFILLED	MONITORING	WFU	OTHER	(SPECIFY)	23 5		SPECTOR		L
22. DISPOS	sition of HC مر A		Bentonite	NA		N		[]	lust 1	h-		
	<u> </u>	<u></u>	Ventonite				GEOTECH SA		ANALYTICAL	BLOW		
ELEV.	DEPTH		DESCRIPTION OF MATERIALS			SULTS	OR CORE BO		SAMPLE NO	COUNTS		REMARKS
a	b		C	7. 1. in m		d	e		f	9		h
		CUAY, 6	Bry dark brown dism plarticity	13 IOYK					5801			
:					0							
		CLAY, d	lack grayish bro	1 1/2 101					0-1			
	. =	Soft, n	ion plactic, m	silt			3.7	-		2		
	<b>′</b>	downp			0		3.1	-		-		
							4					
					-		. 1					
		SILT, b	slic, some say	, د	0							
	z	non pla	slie, some sam	d	ľ							
	=	damp										
•	=											
					D							
	. =											
	3											
	=											
		1			0							
	-	]										
	¥	]									084	)
									1			
		1		,	0							
		L			l I				1		1	
	-	1			1						1	
	- ح	-	PROJECT					<u></u> .		HOLE NO.		

5

		HTW DRIL		G			HOLE NO. FTRT: -072 DPOZ
PROJECT	4074	17 EST 49 siles	INSPECTOR	0.90			SHEET © 2 OF 4 SHEETS
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS
	1111	same as Abeve	0				
	6	SAND, pade brown 6/310YR) boase, file graited, damp	Ю	3.1 / 1			ė:
	רויין יו וויין יו		0		5802 7-8		
	or 1111111111	SAND, pake brown (3/310VR). lose, medium grailed, dwmp, quarter teldspar	0				0850
	9 1111		0	4, /4			
	10		0			÷	
	"		0		1B03		
	12		0		11-12		P\$\$55
			0	3.8 /4			
	14	PROJECT	0			HOLE	

Form MRK-55-2



PROJECT			HTW DRIL					10LE NO 1 <u>77-072 01</u> HEET <b>9 7</b> F <b>4</b> SHEETS
	407	47 EST 49 51	les	INSPECTOR	G	1	0	F 4 SHEETS
ELEV. a	DEPTH b	DESCRIPTION		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS
	-	SAME AS ABOU						
	-							
				0				
	24 -							0910
	-	Bottom of l	kohe					
	-							
	-							
		· · · ·						
	_							
	_							
•	-		. · ·					
			• • •					
	-							
	-			, .				
•								
	-							
	-							
	_							
			•	· · ·				
	-							
	-							
	-							
			PROJECT				HOLE NO	<u> </u>
	0:	51601 orm MRK-55-2	40747					022 DF112

·

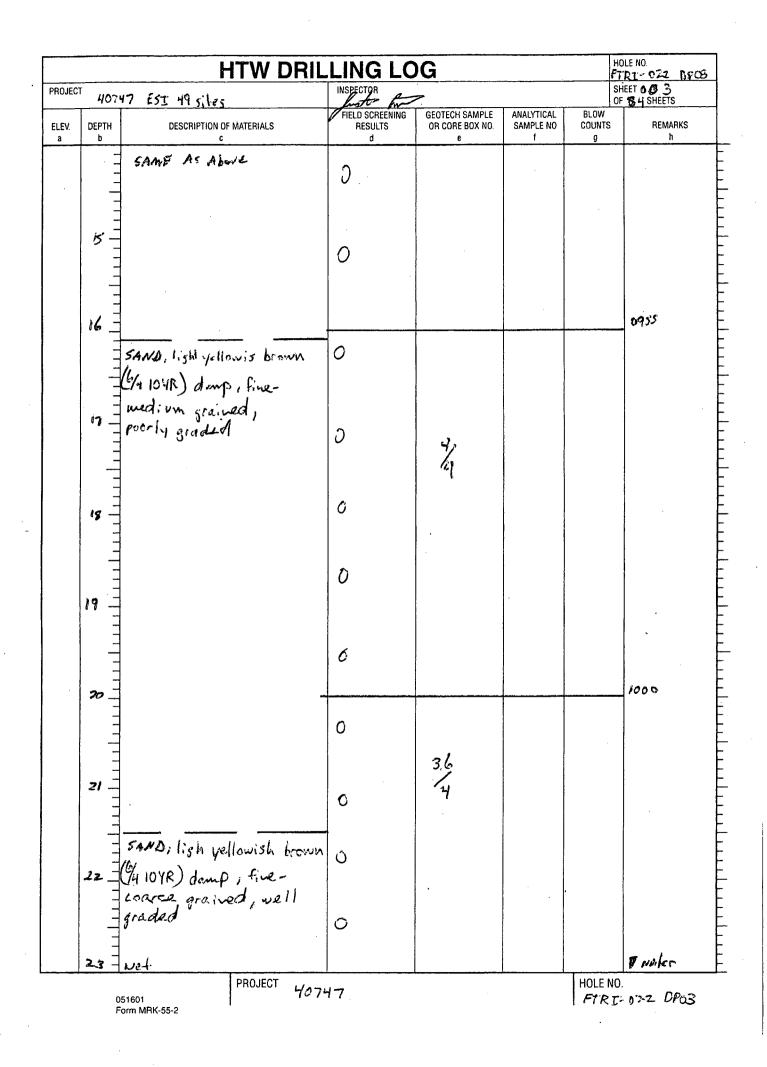
e.

•

			HTW C	RILL	ING	i LO	G				HOLE	NO. 1-32.2 DPOB
1 COMPAN		Sums + W	- Davali	2.	DRILLING	SUBCONTI	RACTOR EPS				SHEET	SHEETS
3. PROJEC	Ť			I		4. LOCAT	ION					
5. NAME O		747 ESI	: 49 siles		<u> </u>	6 MANUE	ACTUBER'S D		TION OF DRILL			
5. NAME U		lennis Ell	er / Eric mer	hoff		4			cech Pusi	h		
	ND TYPES OF	DRILLING	Geopreiz 4200			8. HOLE	LOCATION					
AND SAI	WPLING EQUI		4' macro core			9 SUBFA	NA CE ELEVATION					
			•				NA		<u></u>			
					<u></u>	10 DATE	STARTED	1.		11. DATE COMP ブルレ		
12. OVERB	URDEN THICI	NESS	<u></u>			15. DEPT	H GROUNDWA	_	ICOUNTERED	.710 )	<u>ue</u> -	
		NA					23					
13. DEPTH	DRILLED INT	o Rock √A				16. Dept	H TO WATER / NA	ND EL	APSED TIME AFTE	ER DRILLING COM	APLETED	
14. TOTAL	DEPTH OF H					17. OTHE		EL MEA	ASUREMENTS (SPI	ECIFY)		
18 GEOTE	CHNICAL SA		DISTURBED	UND	STURBED	19	the second s	BER OF	CORE BOXES			
20. SAMPL	ES FOR CHE	MICAL ANALYSIS	VOC	METAL	S	OTHER	(SPECIFY)	10	HER (SPECIFY)	OTHER (SF	PECIFY)	21. TOTAL CORE RECOVERY
	3			3		-					•	RECOVERT %
22 DISPOS	SITION OF HO		BACKFILLED	MONITORING	) well	OTHER	(SPECIFY)	23. 5	SIGNATURE OF IN	SPECTOR		
	. N#	đ	Bentomile	NA		<b>∧</b>	4	0	hat a	h		
ELEV	DEPTH b	DE	SCRIPTION OF MATERIALS	· · · · · · · · · · · · ·		CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO.	BLOW COUNTS 9	F	REMARKS h
a	-	CLAY, do	rk bown 3/3 10 41	R)			, °			9	<u></u>	
	-		plastic., damy		0				5001			
		grass ro	ots						0-1			
			15/ 10/19		<b> </b>				0-1			
	i	soft 4	rown (5/3 10:11 on plastic,	9	0		14			:		
		har a	on plastic,	damp.			14					
		mace (	clary, with s	e in C								
					0							
	2_											
					0							
	ے <u>،</u> د											
					0							
											•	
											0940	<b>`</b>
	۲				<u> </u>		<u> </u>	<u> </u>			0770	/
	Ξ											
					0							
	5 -						L					
	orm In 89 55	P	ROJECT							HOLE NO.		

• •

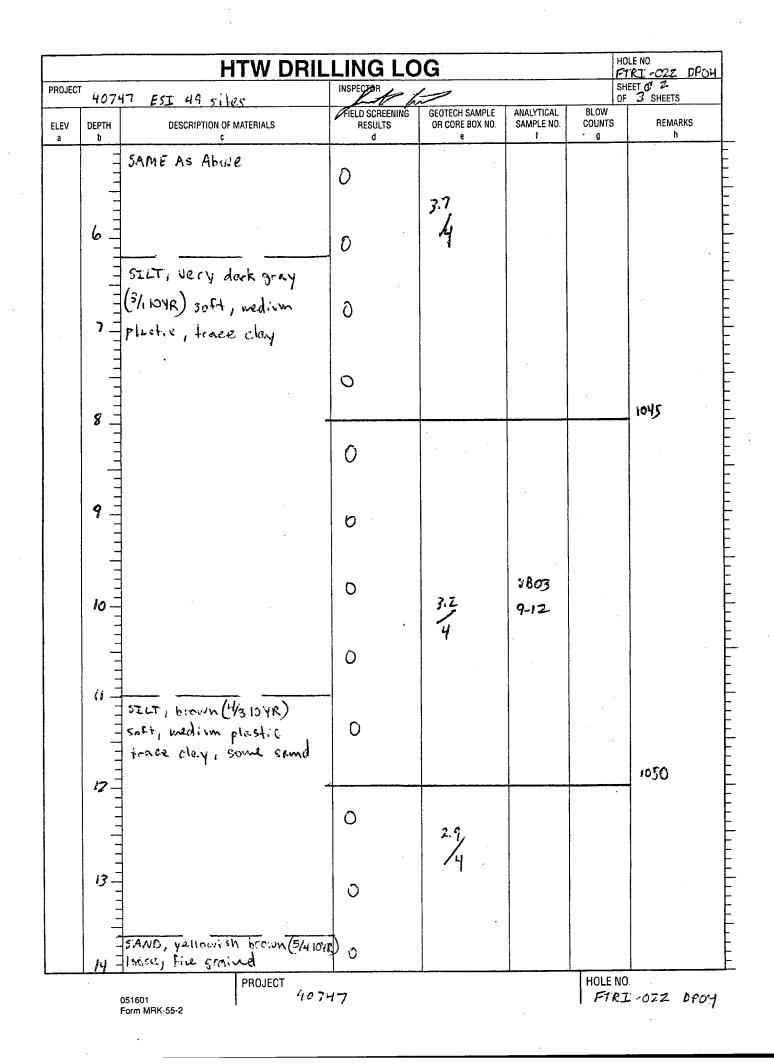
HOLE NO. **HTW DRILLING LOG** FTRI-022 DAUS SHEET 0 2 OF 4 SHEETS PROJECT INSPECTOR EST 49 Siles 40747 FIELD SCREENING RESULTS GEOTECH SAMPLE OR CORE BOX NO ANALYTICAL BLOW COUNTS REMARKS DEPTH SAMPLE NO ELEV. DESCRIPTION OF MATERIALS f h d g b e С JAME as Abour 0 SILTS duck gray (4/, 104R) medium, non plastic 4/4 6 0 0 73 - (LAY, black (2/, 104R) SEOZ soft, domp, medium 7-8 plasticity 0 0945 8 0 9 0 CCAY. dark boown (3/3 10VR) 4 Medium, damp, high Plashieity SB03 10 0 10-11 0 11 FILT, brown \$\$ 104R 0 soft, trace plastic 0910 コン 0 3.1 4 13 SAND. brown (5/3 10 YR) loose, fire-medium grained О lease sitt. 0 14 HOLE NO. PROJECT 051601 Form MRK-55-2

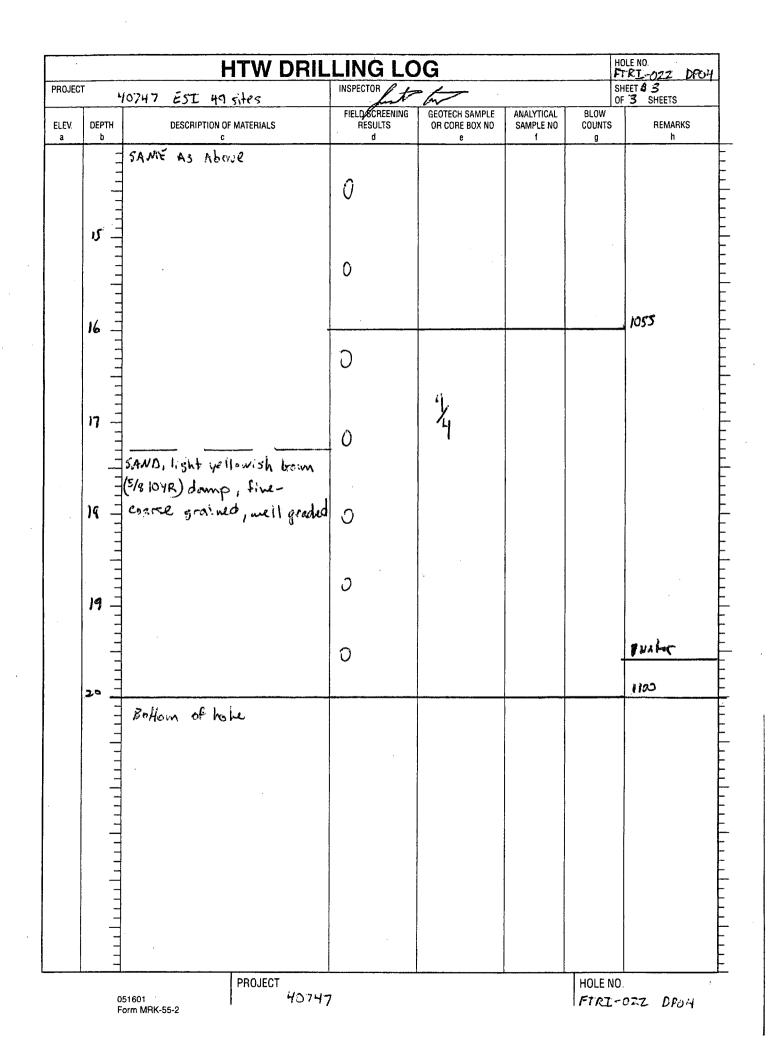


PROJEC	r		DRILLING LC		· · · · · · · · · · · · · · · · · · ·		HOLE NO. FTRT-022 DSUB SHEET & H OF H SHEETS
rnujeg	407	17 ESI 49 sites	fing	CEDTECH SAMPLE		BLOW	OF 4 SHEETS
ELEV. a	DEPTH	DESCRIPTION OF MATERIAL	S FIELD SPREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	COUNTS	REMARKS h
	=	SAME AS Aboile					
	-		0				
		· · ·					1014
	2-1-			<u> </u>			7074
	-	Bettom of hole					
	-						
	-						
	-						
	-						
		· ·					
	-						
	-						
	-						
	-						
	-						
	-						
		•					
		PROJE	I CT	<u> </u>	<u> </u>	HOLE	<u> </u>
			0747				I-012 DP03

	HTW [	ORILL	ING	LO	G				HOLE	NO. L-OZZ DFO'
		2	DRILLING SI					. <u></u>	SHEE	
Bins & McDo PROJECT		<b>I</b>	4	EP5	ION				<u>10r_3</u>	SHEETS
40747 .ES	I 49 silves				Fort R:		TION OF 65"			
NAME OF DRILLER Denn's El	Ler.		6				TION OF DRILL	Aush_		
SIZES AND TYPES OF DRILLING	Eoprola 4200	)	8	HOLE	LOCATION	ł	<u></u>			
	macrocore	<u> </u>		SURFA		4				
	<u> </u>		· ·		NĄ					
			<sup>1</sup>	0 DATE	STARTED	.6		11. DATE COM 7/10/c		
2. OVERBURDEN THICKNESS	·····		1	5 DEPT	H GROUNDWA	TER EN	COUNTERED	**************************************		
3 DEPTH DRILLED INTO ROCK			1	6 DEPT	19.6 H TO WATER /		APSED TIME AF	TER DRILLING CO	MPLETED	
NA	<u></u>				NA					
4 TOTAL DEPTH OF HOLE			1	7. Othe	R WATER LEV. ッパト	el mea	SUREMENTS (S	SPECIFY)		
8 GEOTECHNICAL SAMPLES	DISTURBED		STURBED	19	TOTAL NUM	BER OF	CORE BOXES	•		
O. SAMPLES FOR CHEMICAL ANALYSIS	O voc		·	OTHEF	C' I (SPECIFY)	то	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE
3	·	3						1 -		RECOVERY %
2. DISPOSITION OF HOLE	BACKFILLED	MONITORING	WELL	OTHEF	(SPECIFY)	23. 5	GNATURE OF	INSPECTOR		<u>i                                    </u>
NA	Bentonite	NA		N	A	]_	lat .	hi		
ELEV DEPTH DES(	CRIPTION OF MATERIALS	L	FIELD SCF RESU	LTS	GEOTECH SA OR CORE BC		ANALYTICAL SAMPLE NO	BLOW COUNTS g		REMARKS h
- C/ IOVR) damps for trace st SELT, da	-k brown (3/3 divm plasting race clay,	plastie ots ICVR)	0 0 0		3.6		5801 0-1 5802		1040	

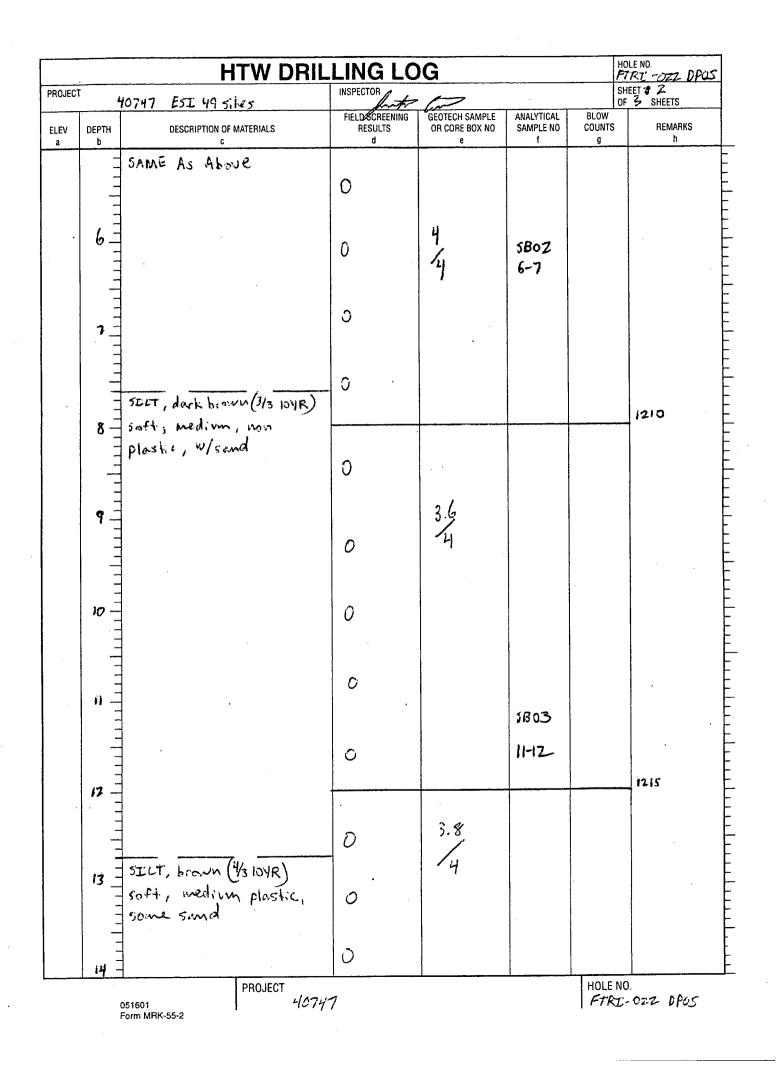
3

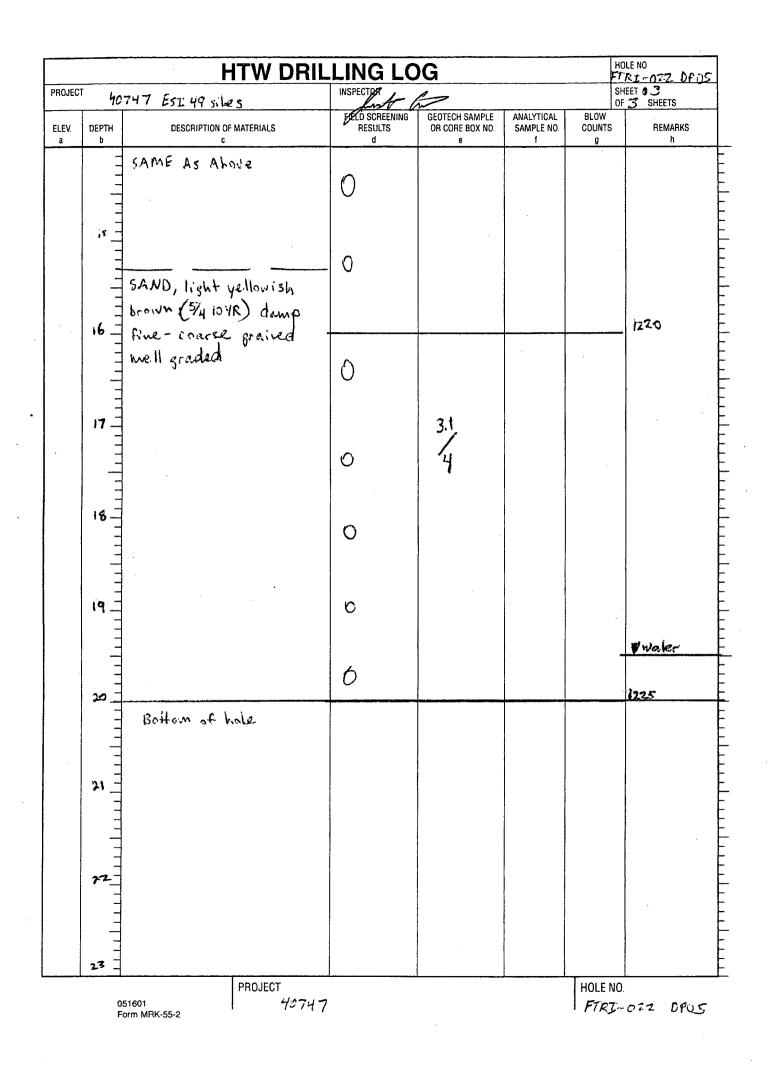




COMPANY NA				DHII	NC	10	2				HOLEN	
			HTW D			SUBCONTRA					FTRT. SHEET	-022 DP05
and the second	ME Burns & M	Ac Don	nell	2. 1		P	<u>[ps]</u>					SHEETS
PROJECT						4. LOCATIO	on A Riky	,				
NAME OF DRI	40747 ES			<u></u>		6. MANUF	ACTURER'S DES	SIGNAT	ION OF DRILL			
	Dennis	Eller	- / Eric Merh	off				<u>D; re</u>	et Fush		·	·
	PES OF DRILLING	620	pro12 4200			8. HOLE L	OCATION NA					
ANU SAMPLIN		- 4	Mactorate			9. SURFAC	E ELEVATION					
						10. DATE	NA		T	1. DATE COMP		
						IU. DATE	7/10/00			7/10/06		
12. OVERBURD						15. DEPTH		ER ENC	COUNTERED			
	LED INTO ROCK					16 DEPTH	19.5 1 TO WATER AN	ND ELA	PSED TIME AFTE		PLETED	
	NA						NA					
14 TOTAL DEP	TH OF HOLE					17. OTHE	R WATER LEVEL	L MEAS	SUREMENTS (SPE	CIFY)		
18. GEOTECHN			DISTURBED		STURBED	19	TOTAL NUMBE	ER OF	CORE BOXES			
(	0		voc T	C METAL			(SPECIFY)	011-	HER (SPECIFY)	OTHER (SP	PECIFY)	21. TOTAL CORE
20 SAMPLES F	OR CHEMICAL ANALY	340			~		(or con 1)				•	RECOVERY %
22. DISPOSITIO			BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)	23 S	IGNATURE OF INS	PECTOR		
	NUFHOLE	ŀ				N/		20. 0.	1 tr			
· · · · ·	~~~	<u> </u>	Bentonite	٨V			3 GEOTECH SAN	MPLE	ANALYTICAL	BLOW		
ELEV DI	EPTH b		RIPTION OF MATERIALS c			SULTS d	OR CORE BOX	(NO	SAMPLE NO. f	COUNTS g	F	REMARKS h
	CLAY	ver	y derk granis	h brown			. · · ·		SBOI	:		
		R) m	edivm, mediv	m plastic	0				0-1			
	silt	~7 <i>4</i> j	ress mats,	400,02			4/4					Í
		 	wn (4/3104R)	c.Ch	1							
		laut		JUFT	0							
		10-54	ie, damp, the clay	rale								
	- Sema	507	we cray									
	2 -											
					0							
	-				1							
	]				0							
	5											
	Ξ											
							ļ					
	. <u>1</u>				0	•				-	1205	
	1				<u> </u>					<u></u>	1	
	7											
					D							
							•			2 2		

•





Boring Logs Custer Hill WWTP Sludge Drying Beds (FTRI-023)

			HTW D	RILLI	NG	LO	G			. <u></u>	HOLE	NO. - 023 DPO	
COMPA	NY NAME				RILLING SL		CTOR			<u> </u>	SHEET	1	
		ne 4 MeD	mull		I.	LOCATIO		EPS			OF	SHEETS	
PROJE		0747 ESI	- 49 siles		4.	LUGATI	Fort	<b>8</b> .'I	and and				
NAME (	FDRILLER				6		CTURER'S DE	ESIGNA	TION OF DRILL				
	. De	onnis Elle	r leric merhof	<u>{</u>				_/(	). rect fis	<u>h</u>		· · · · · · · · · · · · · · · · · · ·	
	ND TYPES OF		Generale 4200 4' macrocane		8	HOLE LO	NA						
			4 Macrocane	<u>.</u>	9.	SURFAC	E ELEVATION						
							NA		r				
					1'	0. DATE S	TARTED	12h		11. DATE COM			
OVER	SURDEN THIC	KNESS			· 1	5. depth	GROUNDWA		ICOUNTERED				
		<b>5</b> '					NA						
). Depti	DRILLED INT				1	6. Depth	TO WATER A	ND EL	APSED TIME AFT	er drilling co	MPLETED		
	DEPTH OF H	IOI F		<u></u>	1	7 OTHER		EL MEA	SUREMENTS (SP	ECIFY)			
		5				17 OTHER WATER LEVEL MEASUREMENTS (SPECIFY)							
8. GEOT	CHNICAL SAI	_	DISTURBED		IURBED	19. TOTAL NUMBE			CORE BOXES				
0 SAMP	ES FOR CHE	MICAL ANALYSIS	METALS		OTHER	SPECIFY)	OTHER (SPECIFY)		OTHER (S	PECIFY)	21. TOTAL COR		
<b></b>		;	VOC	5							•	RECOVERY %	
0 01000	SITION OF HO	J HE	BACKFILLED	MONITORING	WELL	OTHER (SPECIFY)		23 0	23. SIGNATURE OF INSPECTOR			70	
2. DISPC	NA			NA		NA							
	·····		Benbeuile						7 ·····	Di Oli	r		
ELEV a	DEPTH b	DE	SCRIPTION OF MATERIALS		FIELD SCR RESUL d	LTS	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO 1	BLOW COUNTS 9	F	REMARKS h	
	-	Top soil	·										
	E	CLAV , d	ark brown 3/2	0		<u>(</u> ) »							
		dana	dark brown 3/3104R stiff, non plastic				1/2						
	1	and ?	price , non pl	ashic			- 1		SBO I				
	!	•			0				1-2				
					ð								
	<u> </u>												
	11												
	2				0								
	۲ <u>–</u>												
					0						ļ		
	1				•						l		
	3	C1 A10 1	, <u>17 , 1</u>										
		(34, 200	-k yellowish br	OPW	c.								
		Olant's	damp, stiff,	100	0								
		- Plastic, brace bedrock in		- m							l		
		4 _ Weathured bedrock									1515		
		ill y a 3 Let -	and handrach	1							1	. 1	
		Weather	ed bedrock	4		ļ			1	1	62.50	Sal	
		<u>Eng</u> Wealther	ed bedrock								Refu Bolto	-	
		Weather	ed bednek		0						BoHo	m of hole	
		Weather	ed bedrock	-	0						1	m of hole	

.

.

			HTW [	DRILL	ING	i LO	G					E NO. <b>I-0</b> 73	DP02
COMPAN	NY NAME	Borns a Mi	Nousall	2.	DRILLING	SUBCONTR	ACTOR				SHEE		
PROJEC		<u></u>			<u> </u>	4. LOCAT						A UNLEIO	
		40747	EST 49 siles				ACTUPER'S D		TION OF DRILL				
NAME O	f Driller	Dennis Eli	er Eric mer	haft					Direct Pe	54			
	ND TYPES OF	DRILLING	Senprohe 4200	)		8. HOLE							
AND SA	MPLING EQUI	PMENT	H macrocord							<u></u>			
						a. John A	NA						
						10 DATE	STARTED	1		11. DATE COMP 7/11			
OVERB	URDEN THIC	KNESS			·····	15. DEPT	H GROUNDWA		and the second s		100		
		6					<u>, M A</u>						
. Depth	Drilled int	O ROCK	4			16. DEPT	H TO WATER A	ND EL	APSED TIME AFTE	R DRILLING COM	IPLETED		
TOTAL	DEPTH OF H	OLE 6				17. OTHE		el mea	SUREMENTS (SPI	ECIFY)			
GEOTE	CHNICAL SAI		DISTURBED		ISTURBED	19	19 TOTAL NUMBER OF CORE BOXES		CORE BOXES				
SAMPL		MICAL ANALYSIS	VOC	META		OTHER	(SPECIFY)	TO	HER (SPECIFY)	OTHER (SP	ECIFY)	21 TOTAL CORE RECOVERY	1
	Z			2	2					·		RECOVERY %	
DISPOS	SITION OF HO	DLE	BACKFILLED	MONITORING	g well	OTHER	(SPECIFY)	23. 8		SPECTOR			
.N	A		Bentonile	A.V.		. N	A	1	land	In			
ELEV. a	DEPTH b	DES	SCRIPTION OF MATERIALS		RES	CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO f	BLOW COUNTS g		REMARKS h	
		Fill clay	1		0								
					ľ		2						F
													Ē
	!			<u></u>									F
	· ]	CLAY, Ke	sht gray (1/210	YR)	0		17		5801				Ē
		Stift, mo	tion plustici	ty			4		1-Z	1			F
		some give	vel, damp										ŀ
	2				0								Ē
													Þ
													Ē
	-				0								þ
	3 _												Ē
	-												F
													Ē
					0								E
	<i>4</i>										i34 S		þ
						i							. E
	Ξ						21						F
					0		Z						F
1	-												F
	5 -						1	1	1	1			-

		HTW DRI	LINGIC	)G			HOLE NO
PROJECT		· · · · · · · · · · · · · · · · · · ·	INSPECTOR	1 1-			SHEET 1
ELEV.	<u>4074</u> DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO	BLOW	OF SHEETS REMARKS
а	b	c	d	е	f	. g	<u>h</u>
	·	SAME AS Abook					
	-		0		5B02		
	=				5-6		
	6 -						1355
	-	Refusal					
		Tried 2 other location					
	-	vear area + refusal was					
	=	et m sama location					
	-						
	-						
	-						
	-						
:	_						
	_						
	_						
	=						
	-						
	_					•	
	_						
	_						
					, ,		.
ſ		PROJECT		1	<u></u>	HOLE	NO

AND SAMPLING 2. OVERBURDEN 3. DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 2. DISPOSITION 2. DISPOSITION 2. DEP	BUTNS & Y 40747 E AILLER DOMAIS E TYPES OF DRILLING NG EQUIPMENT DEN THICKNESS ID LLED INTO ROCK MA TH OF HOLE IC HICAL SAMPLES D FOR CHEMICAL ANALYS 3	DISTURBED	rinoff 00		8. HOLE I 9. SURFA 10 DATE 7 15. DEPTI	ION ACTURER'S DI ACTURER'S D	ESIGNAT	fion of DRILL ): reed P	: sh 11. date com 7/11/3	PLETED	SHEETS
<ol> <li>NAME OF DRILL</li> <li>SIZES AND TYP AND SAMPLING</li> <li>SIZES AND TYP AND SAMPLING</li> <li>OVERBURDEN</li> <li>DEPTH DRILLE</li> <li>DEPTH DRILLE</li> <li>TOTAL DEPTH</li> <li>GEOTECHNIC</li> <li>SAMPLES FOI</li> <li>SAMPLES FOI</li> <li>DISPOSITION</li> <li>A</li> <li>ELEV. DEP</li> </ol>	40747 E RILLER Dannis E TYPES OF DRILLING NG EQUIPMENT DEN THICKNESS ID LLED INTO ROCK MA TH OF HOLE ICAL SAMPLES D FOR CHEMICAL ANALYS 3	DISTURBED			6 MANUF 8 HOLE L 9 SURFA 10 DATE 7 15 DEPTI 4 16 DEPTI	Forie F ACTURER'S DI JOCATION NA CE ELEVATION NA STARTED //// JOC H GROUNDWA'	ESIGNAT	fion of DRILL ): reed P	11. DATE COM		
2. OVERBURDEN 2. OVERBURDEN 3. DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 20. SAMPLES FOI 21. DISPOSITION 22. DISPOSITION 23. A ELEV. DEP	RILLER DOMAIS E TYPES OF DRILLING NG EQUIPMENT ID NEN THICKNESS ID LLED INTO ROCK MA TH OF HOLE ICAL SAMPLES D FOR CHEMICAL ANALYS 3	DISTURBED			8. HOLE I 9. SURFA 10 DATE 7 15. DEPTI	ACTUREN'S DI COCATION NA CE ELEVATION NA STARTED /11/SC H GROUNDWAT	ESIGNAT	fion of DRILL ): reed P	11. DATE COM		
2. OVERBURDEN 2. OVERBURDEN 3. DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 20. SAMPLES FOI 21. DISPOSITION 22. DISPOSITION 23. A ELEV. DEP	Danks E TYPES OF DRILLING NG EQUIPMENT ID ID ID THICKNESS ID ILLED INTO ROCK ID ILLED INTO ROCK ID ID ID ID ID ID ID ID ID ID ID ID ID	DISTURBED			8. HOLE I 9. SURFA 10 DATE 7 15. DEPTI	Section NA NA ce elevation NA Started /11/SC H groundwa VA	2. / O	);reet P	11. DATE COM		
AND SAMPLING 2. OVERBURDEN 3. DEPTH DRILLE 4. TOTAL DEPTH B. GEOTECHNIC 2. DISPOSITION 2. DISPOSITION 2. DEP	NG EQUIPMENT	Ji Mazescote.	UND		8. HOLE I 9. SURFA 10 DATE 7 15. DEPTI 16. DEPTI	OCATION NA NA STARTED H GROUNDWAT	1		11. DATE COM		
2. OVERBURDEN 3. DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 10. SAMPLES FOR 12. DISPOSITION 12. DISPOSITION 14. A ELEV. DEP	ILED INTO ROCK TH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-		9. SURFA 10 DATE 7 15. DEPTI 4 16. DEPTI	CE ELEVATION NA STARTED //IIIOC H GROUNDWA					
3 DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 10. SAMPLES FOI 12. DISPOSITION 14. A 15. A 16. A	iD ILLED INTO ROCK //A PTH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-		10 DATE 7 15. DEPTI .4 16. DEPTI	NA STARTED /11 06- H GROUNDWA VA					<u></u>
3 DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 10. SAMPLES FOI 12. DISPOSITION 14. A 15. A 16. A	iD ILLED INTO ROCK //A PTH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-		15 DEPTI .4 16. DEPTI	H GROUNDWA	TER ENG				
3 DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 10. SAMPLES FOI 12. DISPOSITION 14. A 15. A 16. A	iD ILLED INTO ROCK //A PTH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-		15. DEPTI 16. DEPTI	h groundwa V <b>A</b>	TER ENG		7/11/0	E	
3 DEPTH DRILLE 4. TOTAL DEPTH 8. GEOTECHNIC 10. SAMPLES FOI 12. DISPOSITION 14. A 15. A 16. A	iD ILLED INTO ROCK //A PTH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-		16. DEPTI	VA					
4. TOTAL DEPTH 8. GEOTECHNIC, 10. SAMPLES FOI 12. DISPOSITION NA ELEV. DEP	NA I'TH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-								
8. GEOTECHNIC, 20. SAMPLES FOI 22 DISPOSITION 24 A ELEV. DEP	ITH OF HOLE ICAL SAMPLES O FOR CHEMICAL ANALYS 3	DISTURBED	-				ND ELA	PSED TIME AFTE	R DRILLING CO	MPLETED	
8. GEOTECHNIC, 20. SAMPLES FOI 22 DISPOSITION 24 A ELEV. DEP	ICAL SAMPLES O FOR CHEMICAL ANALYS 3	0	-			V A R WATER LEVI	EL MEAS	SUREMENTS (SP	ECIFYI		
20. SAMPLES FOI	D FOR CHEMICAL ANALYS 3	0	-			NA					
2 DISPOSITION	FOR CHEMICAL ANALYS		C		19		Ber of	CORE BOXES			
2 DISPOSITION	3		the second s	Management of the local division of the loca	OTHER	(SPECIFY)	OTH	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE
NA ELEV. DEP			3			~	-	_	T		RECOVERY %
NA ELEV. DEP		BACKFILLED	MONITORIN	G WELL	OTHER	(SPECIFY)	23. SI	IGNATURE OF IN	SPECTOR		L
		Bentonite	NA		NA		h	So los	•.		
	<u> </u>			FIELD SC	L	GEOTECH SA	MPLE	ANALYTICAL	BLOW		
	EPTH b	DESCRIPTION OF MATERIAL	S	RES	d	OR CORE BO		SAMPLE NO.	COUNTS 9		REMARKS h
ř.	Top Joi	dark vellowish	brown								
i.	-/3/ 101	a) line ch'A	¢	0				5801			
i.		dark yellowish R), damp, stiff m plastic	1					e-1			
r.	- Wears	m prastie					ŀ				
				0							
	3					3.6 11					
						4					
	4			0							
2.	²]										
	-										
				N.							
			xa2 1	- 0°							
3.		very dark gray IR) damp stift plasticity	154 brown	1							
	+"2 10)	IR) damp stiff									
	Itrace	plasticity									
	Ē			0							
4	, =			_		•				<i>i45</i> 5	
7.				<b> </b>						1	
	1										
	1			0							
5						1				1	
IRK JUN 89		PROJECT							HOLE NO.	<b></b>	

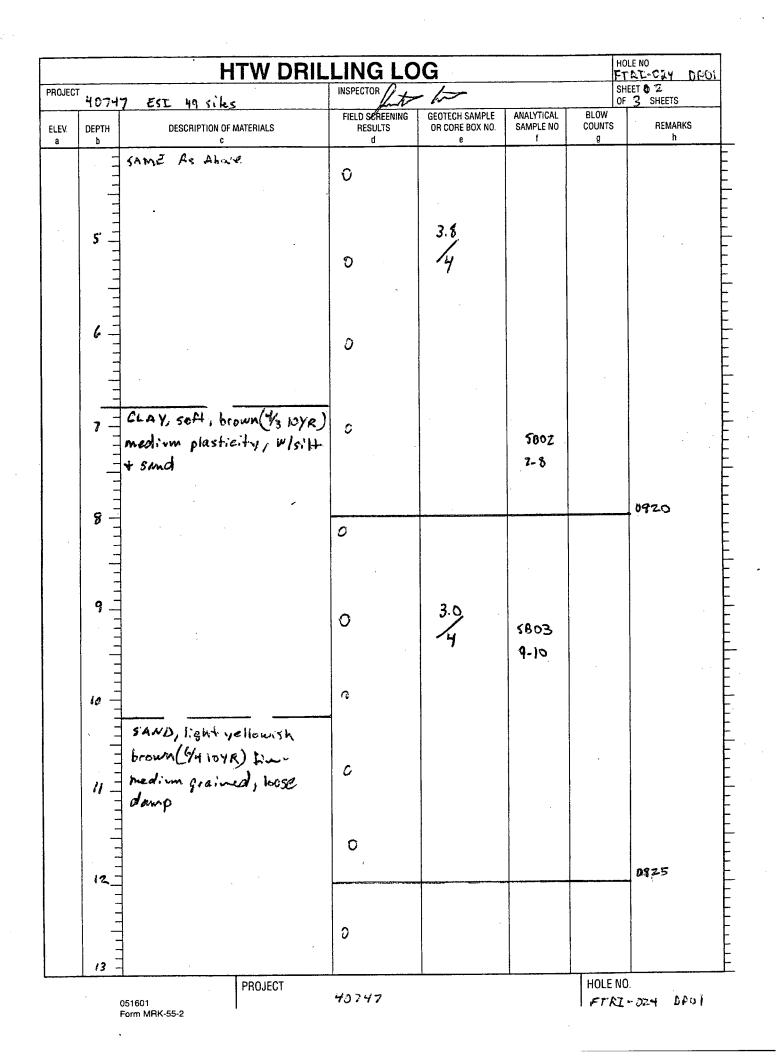
		HTW	DRIL	LING LC	HOLE NO. FTRT-023 DPD: SHEET 0 2	3			
PROJEC	T 40'	747 EST: 49 siles			2/2			SHEET 0 2 OF 2 SHEETS	
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g		
<u> </u>		SAME AS Above		D					F
	6 =			U					E
	-								Ē
		CLAY, dark yellowish	brown		4	5802			E
	-	(3/6 IONIN) stiff, mad	ivm	0	19	5-6			Ē
	7	CLAY, dark yellowish (3/6 1041A) stiff, med plastionty			•				
									È
				0					F
	-							1500	Ē
	8 -		+	<u></u>	1.2				E
				0	1.2	5803			E
	-			· ·		8-9			F
	9_			0					E
	'	Weathered bedrock		U					F
		Weathered bedrock							F
				0				1505	E
	b_	Bottom of the							Ē
									Ē
									F
	· -								E
	=								
	-								F
									E
		1							F
									F
					1				E
									E
									-
		}							Ē
	-								Ē
									F
L		PROJECT					HOLE	NO.	_ <b>_</b>
		051601 J	40747					I-073 DAUS	

		<u></u>			RILL	ING	i LO	G				HOLE		13 DPOH	]
1. COMPA	NY NAME				2.		SUBCONTI	RÁCTOR				SHEE	T 1		1
		ma i í	ncr	onnell		•	r	É\$	5		<u> </u>	OF 2	SH	EETS	
3. PROJEC		ביים רובי	r∙i	195:125			4. LOCAT	ort Rik	• =						
5 NAME C			<u> </u>	113,143		<u></u>	6. MANU	FACTURER'S D	ESIGN/	TION OF DRILL	·	·			1
0 10 102 0		Dennis	Elle	2			6	eopis le	/0	seet Pu	sh				
	ND TYPES O			BEAGROLE 421	00		8. HOLE	LOCATION							
AND SA	MPLING EQU	IPMENT	<u></u>	i macrotote			0.01054	NR							$\frac{1}{2}$
							9. SURFA	ICE ELEVATION							
							10. DATE	STARTED			11. DATE COM				1
								7/11/00			<u>7/11/0</u>	مر			1
12. OVERE	IURDEN THIC	KNESS	7.5				15 DEPT		ter en	ICOUNTERED					
13. DEPTH	DRILLED INT	O ROCK					16 DEPT		AND EL	APSED TIME AFT	ER DRILLING CO	MPLETED			
14. TOTAL	DEPTH OF H	IOLE	<u>N I</u>	<b>u</b>			17 OTHE	NA ER WATER LEV	el me/	SUREMENTS (SP	ECIFY)				1
	TOTAL DEPTH OF HOLE 7.5						NA								
18 GEOTE	GEOTECHNICAL SAMPLES DISTURBED						) 19		BER OF	CORE BOXES					
20 6440	SAMPLES FOR CHEMICAL ANALYSIS VOC					) LS			OTHER (SPECIFY)		OTHER (S	PECIFY)	21	TOTAL CORE	
20 SAMPL							OTHER (SPECIFY)				011121110		1	RECOVERY	
	2				2									%	
	SITION OF H	DLE		BACKFILLED	MONITORING	S WELL	OTHER (SPECIFY)		23.		SPECIOR				
	NA			Bentonile	NA		NA			for the	~				
ELEV.	DEPTH		DES	CRIPTION OF MATERIALS			CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9		REMA h		
		-Tap 50	<u>ii</u>			1			-						F
		uny,	dar	k brown (3/3 10 ned.ium plactic stone eobble	SYR)	0				1601					F
		medity	n , n	red.'un plastic	city	0				0-1					F
		trace	line	stone cobble	٢										Ē
		amp								•					E
	-					0									E
	=							21							E
				,				3.1							
			_					1 7							E
	2_	CLAY, 0	lack	yellowish brow	UN 24 10YR										F-
		medin	• ; ₩	on plastic, de	mp										F
			'	, ,	•										F
															F
						0									F
	3														F
	-														E
															E
		CLAV .	dark	yellowish brow	n 3/1 1000	10	I	1							E
		medium	<b>.</b>	race plachat		1						:4.9-			F
	<i>i</i> †	danc	) PAR	race plasticity sible iron band	y i Jim A	}						i425			F
	-		100	nice that the state							•			-	E
	-														E
	-					0									F
						ł									F
	ر	L	PR	DJECT		L		L		L	HOLE NO	4			
MRK /	оям IN 89 55			40747	Ĺ							I-02	З	DFOY	

			HTW DRI	LLING LC	G		۲   	IOLE NO. FTAL - 023 DEC
ROJECT	40'	747 EST	49 siles	INSPECTOR	for the second s		5	SHEET O 2.
LEV. a	DEPTH b	•	IPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS 9	REMARKS h
<u>a</u>		SAME As		0	5			
	6			0	3.5	5B0Z. 4-6.5		
	7 -	weathered (b/_ iovr) u	d linestone clay ery pale brown	0			·	
								i+130
		Refuced	Bottom of hole					
	8 -							
	-							
			•					
			•					
	<u> </u>							
	-							
	-							

Boring Logs Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)

		<u></u>	HTW C	RILL	ING	LO	G				HOLE	NO. 2-024 ppoi
I. COMPA	NY NAME			2.	DRILLING	SUBCONTR	ACTOR				SHEE	T 1 SHEETS
3. PROJEC		ms t phel				4. LOCAT	ON					
		40747 E	52 49 51 125				ACTURER'S D		TION OF DRILL			
5. NAME (	)F DRILLER	Denniss	Eller / Eric W	Verhoff_					ect fish			
	ND TYPES O		enprole 4200			8. HOLE I	OCATION					
ANU SA	MPLING EQU		marmone				CE ELEVATION					
						10. DATE		<u></u>	I	1. DATE COMP	ETED	
						IO. DAIL	<u>7111</u>	6		7/11	106	
12. OVER	BURDEN THIC	KNESS NA				15. DEPTH GROUNDWATER ENCOUNTERED						
13. DEPTH	DRILLED IN	TO ROCK				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED						
14. TOTAL	DEPTH OF H					17. OTHE			ASUREMENTS (SPE	CIFY)		
		50	DISTURBED		STURBED	D 19. TOTAL NUMBER C						
18. GEOT	ECHNICAL SA	MPLES D		0	)		G					
20 SAMPLES FOR CHEMICAL ANALYSIS 3 22 DISPOSITION OF HOLE			VOC	METAL	S	OTHER	(SPECIFY)	OTHER (SPECIFY)		OTHER (SI	PECIFY)	21. TOTAL COR RECOVERY
				3		-					<u> </u>	%
			BACKFILLED	MONITORING	WELL	1	(SPECIFY)	23. 9	SIGNATURE OF INS			
A,	/ <b>A</b> 		Benlinite				GEOTECH SA		· · · · ·	BLOW		
ELEV.	DEPTH b	DES	CRIPTION OF MATERIALS			SULTS	OR CORE BO		SAMPLE NO.	COUNTS 9		REMARKS h
a	_	Topsoil										
	· =	Fill, cla	y raravel	W	0							
		Cobbles	( 7									
	<u> </u>											
					0		3.6		580i			
							4					
	-											
	-	SILT, d.	-k brown (3/3 10	∀R)	0							
	= SICT, d		Amp, medium									
		inedition;	damp, medium ty, trace sand									
		plasticit	y, trace san	d								
	3				0							
	3				0							
	3				0							
	3		own (5/2 toyr) own plastic									
	3				0 0						গপ্তাহ	
											0815	
											2186	

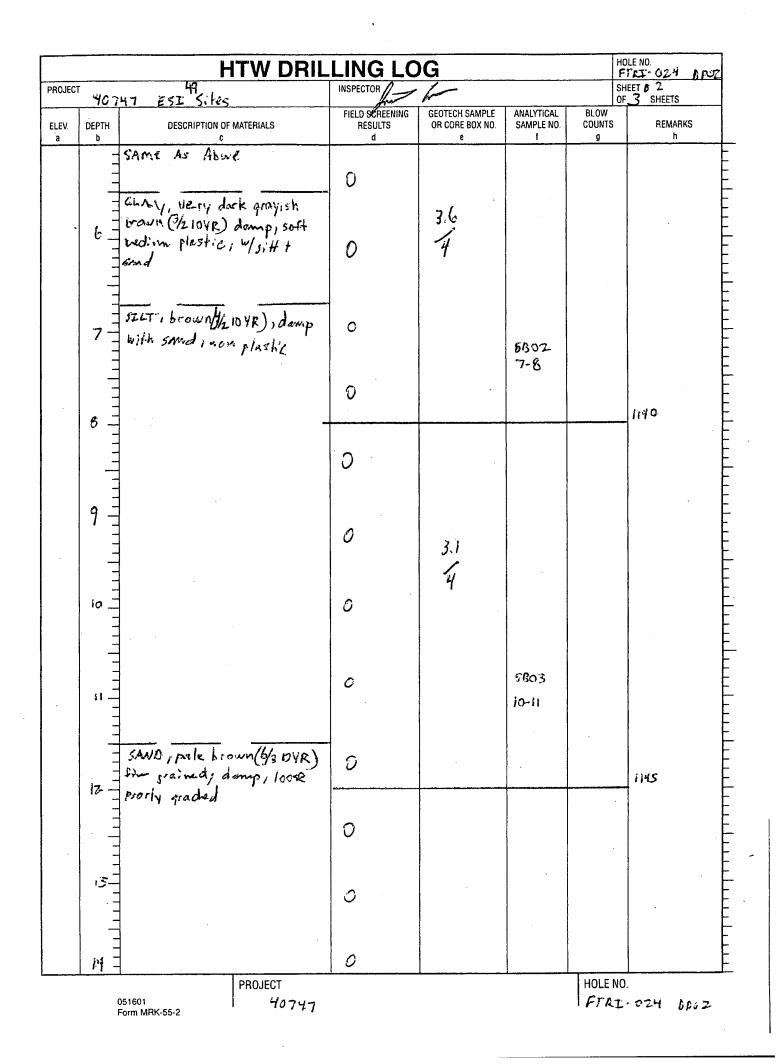


ROJECT		HTW DRIL	INSPECTOR / L				FTRT- 024 DPU SHEET & 3 OF 3 SHEETS
<u> </u>	40	747 ESE 49 sites	FIELD SCREENING	GEOTECH SAMPLE	ANALYTICAL	BLOW	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS C	RESULTS d	OR CORE BOX NO. e	SAMPLE NO. f	COUNTS g	REMARKS h
		SAME AS Above	Ô				
	н н - -		3	3.4 1 4			
	لم 1		0				
	111		O				
	16-			•			0830
	1111		O				
	i <b>n</b>         	SAND, Yellow (16 loyr) Fine medium graind mostly quartz, poorly graded	J	4			
<b>.</b>	18	•	0				
		,	0				<b>V</b> water
	19	SAWD, dark gray ("/ 10YR) Fine graied, wet					
			Ð				
	20						Q635
		Bottom of hole					
	0	51601 PROJECT			•	HOLE	10.

			HTW	DRILL	NG	LO	G				HOLE	NO. 11- 524 DP02	
COMPAN	Y NAME	<u> </u>				SUBCONTR		······			SHEE		
PROJEC		urns t Me				4. LOCATI	ON				105	. SHEETS	
	f Driller		SE 49 sites			6. MANUF	For L	_	RY TION OF DRILL				
			ter / Erse May			8. HOLE L		-10	ised Pos	ih			
	ND TYPES OF		coproles 420 11 macrocor					νĄ					
						9. SURFAC		A.					
						10. DATE	STARTED	7/11		11. DATE COMP 7/11/01			
OVERB	URDEN THICI			<u> </u>		15 DEPTI	H GROUNDWAT	_					
. DEPTH	DRILLED INT	NA_OROCK				16. DEPTI			APSED TIME AFTE	R DRILLING CO	MPLETED		
TOTAL	DEPTH OF H	JA Ole		<u></u>		17 OTHE	R WATER LEVE		SUREMENTS (SP	ECIFY)			
	CHNICAL SA	20	DISTURBED	LINDI	STURBED		N	A	CORE BOXES				
	0						C (SPECIFY)		HER (SPECIFY)	OTHER (S	PECIEVI	21. TOTAL COR	
20. SAMPLES FOR CHEMICAL ANALYSIS 3 22. DISPOSITION OF HOLE NA			VOC		<u>،</u>	UINEN	(OPECIFT)					RECOVERY %	
			BACKFILLED	MONITORING	G WELL	OTHER	(SPECIFY)	23. 8	GNATURE OF IN	SPECTOR	<u></u>		
			Bentonik	NA		N	٩		fact ,	h-			
ELEV	DEPTH	DE	SCRIPTION OF MATERIAI	S		CREENING SULTS d	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO. f	BLOW COUNTS g		REMARKS h	
a	-	TO85-1 -					· ·		· · ·				
		1-11; C-103	y t gravel		0								
									5001				
	1				0		70		1-2				
			e brown (1/3)				3.9						
		non plast	mpr with san	d			7						
	2_=				0								
	-												
					0								
	<u>3</u>		-k gravish bro ) st.ff, dam										
		diane pl		<b>F</b> , )									
					D								
	Ч				<u> </u>		<b> </b>	<u> </u>			1135		
	=												
		}			0					1			

ſ

a so the set there is no to the set of the s



		HTW DRIL	LING LC	)G			HOLE NO FTRT-024
ROJECT	407	147 EST 49 sites	INSPECTOR	In the second second			Sheet 1 DF Sheets
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS
		SAME as Above	0	3.1			
	16	SAND. Light yellowish brown (6/4 10/1R) fine - medium grained , poorly graded, domp	0				1150
			0				
	46		0	5.3 4			
			0				
	-	SAND, brown (\$1310VR) fine- coarse grained, wet, well graded	0			•	1155
		Bollow of Loter					
		PROJECT 051601 50rm MRK-55-2 90747	<u> </u>	<u> </u>	<u> </u>	HOLE N	0. 1-024 DFUZ

			HTW I	DRILL	ING	LO	G				HOLE	NO. I-024 DAB
. COMPA	NY NAME					SUBCONT						T SHEETS
	<u></u> т	BUMS 4	MeDoniell			EPS 4. LOCAT		··			1 OF 3	SHEETS
3. PROJEC		40747	EPS 49 siks				or Ril	2 y				
5. NAME C	F DRILLER					6. MANUF	ACTURER'S D	ESIGNA	TION OF DRILL			
			Eller / Eric Mu	rhoff		C	espeak	1D:	rect Pus	h		
	ND TYPES O		Benpshe 4200			8. HOLE I						
AND 5A	MPLING EQU	JIPMENI	"I'mecrocome			9 SUBEA			<u></u>			
						U. UUIII A	NA					
						10. DATE		/		11. DATE COM		
							7/11/06			7/11/0	6	
12. OVERI	BURDEN THIC	NA				15. DEPT	H GROUNDWA	ter en	ICOUNTERED			
13. DEPTH	DRILLED IN					16. DEPT		ND EL	APSED TIME AFTE	R DRILLING CO	MPLETED	
		NA					NA					
14. TOTAL	. Depth of I	HOLE 20				17. OTHE		el mea	SUREMENTS (SPI	ECIFY)		
18 0501	CHNICAL S		DISTURBED	LINDI	STURBED	10			CORE BOXES		· · · ·	
	LOT INGUAL OF	Ó	0	C			2					
20. SAMP	ES FOR CH	EMICAL ANALY		METAL	s	OTHER	(SPECIFY)	10	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE
	3		~	3		-					<b></b>	RECOVERY %
22. DISPO	SITION OF H	OLE	BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)	23. 5	SIGNATURE OF IN	SPECTOR		
	NA		Bentonike	NA		N	Q	]	Later.	him		
	T	<b>T</b>	Dentante		FIFLD S	CREENING	· · · · · · · · · · · · · · · · · · ·	MPIF	ANALYTICAL	BLOW	<b>I</b>	
ELEV. a	DEPTH b		DESCRIPTION OF MATERIALS c		RES	SULTS d	OR CORE BC		SAMPLE NO. f	COUNTS 9		REMARKS h
		CLAN,	, very dark brow	n							[	
	-		IR) stiff, trace		0				580)			
		Jamp							0-1			
	-	1 17									ļ	
		1										
	=	SECT,	pale brown (6/310	yr)	0		3.)					
	=	1	visand, damp		ľ						ĺ	
	— <u> </u>	non pl	astic				4					
	_											
	2	1			0							
	=	4										
	=											
	-	1			1							
•	3	4			Э							
	=	1										
	=	1										
		1			 _							
	=	1			0							
	Y	1									0910	
	=	1									ļ	
		1					1					
		1			0							
		7										

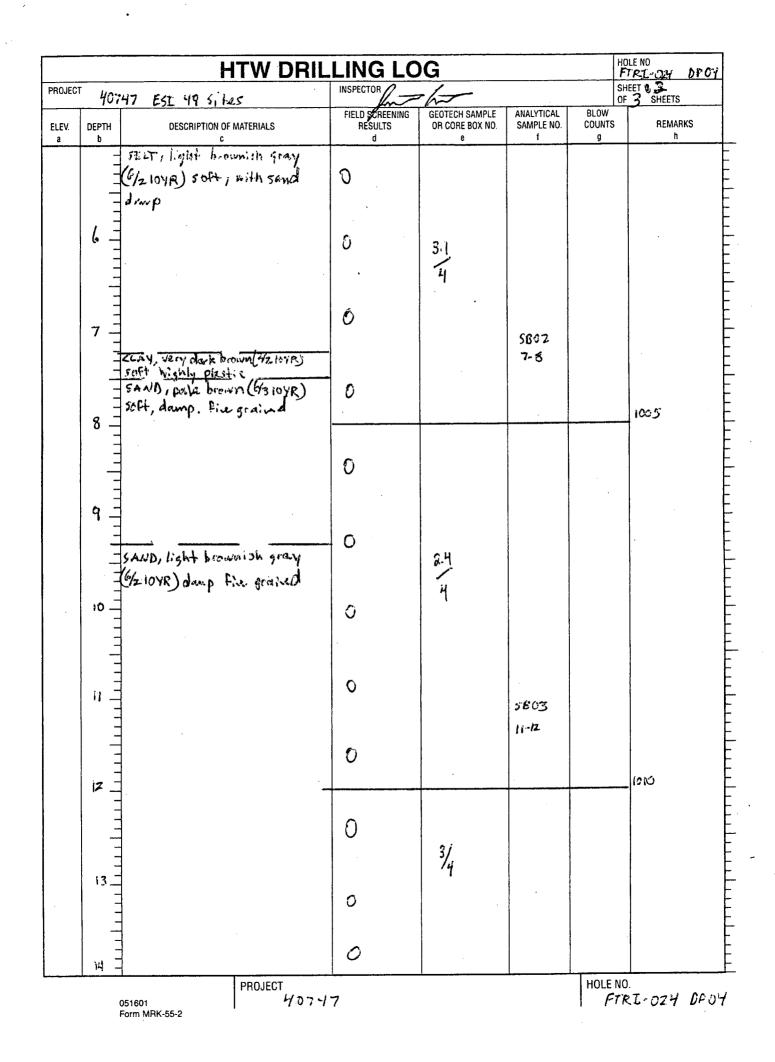
-

		HTW DRIL	LING LC	)G		1	DLE NO. TK1-014 DF03
PROJEC	т <b>Ч</b> 0')н	EST: 17 49 s.l.es		+ har			IEET & 2 3 SHEETS
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS h
		SAME AS Abave	0				
	6		0	4,			
	7		0				
	8	SAND, brown (513 DYR) loose, fix grained, damp	0		5802 7-8		0915
			ଚ	26			
	-	SAND, pale brown (6/3 10 VR) demp, fix-graized, damp	0	2.6			
	10	intermited sitt bundins	0				
			0		5803		
	12-				11-12		0920
		SAND, very pale brown (1/3 10 yR) five-medium grained lease, mustly grante t	0	3, 14			
		foldspar	0				
L		PROJECT 051601 Form MRK-55-2	7	<u> </u>	.1	HOLE NO	

		HTW DRIL	LING LC	P	HOLE NO. FTRI-024 FF33		
PROJECT	τ 40	747 EST 49 sites	INSPECTOR	hit		OF	EET 0 3 3 SHEETS
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		FAME AS Abade	9				
	15		Э				
	16	-	0				0925
	17		J	3.7 4			
	18	CLAY; dark gray (4/1104R) soft high plasticity, Wand SAND, brown (4/3104R) wet coarse grained, some pebbles	0				<b>v</b> vaier
	ig	FAND, graish brown (5/2 10 VB) fine - charse grained, well graded	0				
	20	Boilton of hold					Ø930
		PROJECT 051601 Form MRK-55-2 インフィブ				HOLE NO	CZ4 DAUS

			HTW D	DRILL	NG	LO	G				HOLE	NO. 2-024 NPC4
1 COMPAN		inne 🕯 D	reDonnell	2.		SUBCONTI	RACTOR				SHEE	
3. PROJEC						4. LOCAT						
5. NAME O			EST 49 siles				ACTURER'S DI		TION OF DRILL			
	1		ler / Eric Marke	the second s		(	Georgia		ired Ris	ih.		
	ND TYPES O		Geoprole 4200	>			LOCATION . NA					
ANU SAI			41 mecrocore					I				
		F					NA					
		F				10. DAIE	STARTED	6.	·	11 DATE COM 7/11	106	
12. OVERB	URDEN THIC		•			15. DEPT	H GROUNDWA	ter en	ICOUNTERED			
	DRILLED INT		<u>A</u>		<u> </u>	16 DEPT	H TO WATER /		APSED TIME AFTE		MPLETED	
10. DEFIN		N/	٨		·		NA	_				
14 TOTAL	DEPTH OF I	HOLE 20	_			17. OTH	R WATER LEVI		ASUREMENTS (SPI	ECIFY)		
18. GEOTE	CHNICAL SA		DISTURBED	UNDK	STURBED	19	TOTAL NUM		CORE BOXES			
00 0000			s voc	METAL	<u>0</u>		(SPECIFY)		HER (SPECIFY)	OTHER (S		21. TOTAL CORE
20. SAMPL		EMICAL ANALYSIS			<u> </u>					UTILA (J	-Loir I)	RECOVERY
			BACKFILLED	3 MONITORING	WELL	0745	(SPECIFY)	22 6		SPECTOR		%
	Sition of Ho √A	JLE			WELL			20. 0				
	· · ·		Bentonile	NA			GEOTECH SA		ANALYTICAL	BLOW		
ELEV.	DEPTH		DESCRIPTION OF MATERIALS	1		SULTS	OR CORE BO		SAMPLE NO.	COUNTS		REMARKS h
a	ь —	Topsoil	<u>с</u>							A		
			-own (4310YA) 50	0£t	0						l	
		non pla	own (4310YA) so stic, loace som	d								
	·	1 '	-				3.7					1
					0		1		580			
							1		1-2			
1				-							l	
		ŕ										
	2	FILT , I	ght brownish so	A y	0							
			) soft non plas	-								
		"/sand		×								
					0							
	3											
				-								
		CLAY do	ark brown 13 10 y	R)	0						•	
	4	menting	, madium plass	lic			ļ				1000	
		50 me :	- 14									
					0							
				-								
	5 -											
ل		•	PROJECT 40747							HOLE NO.		

•

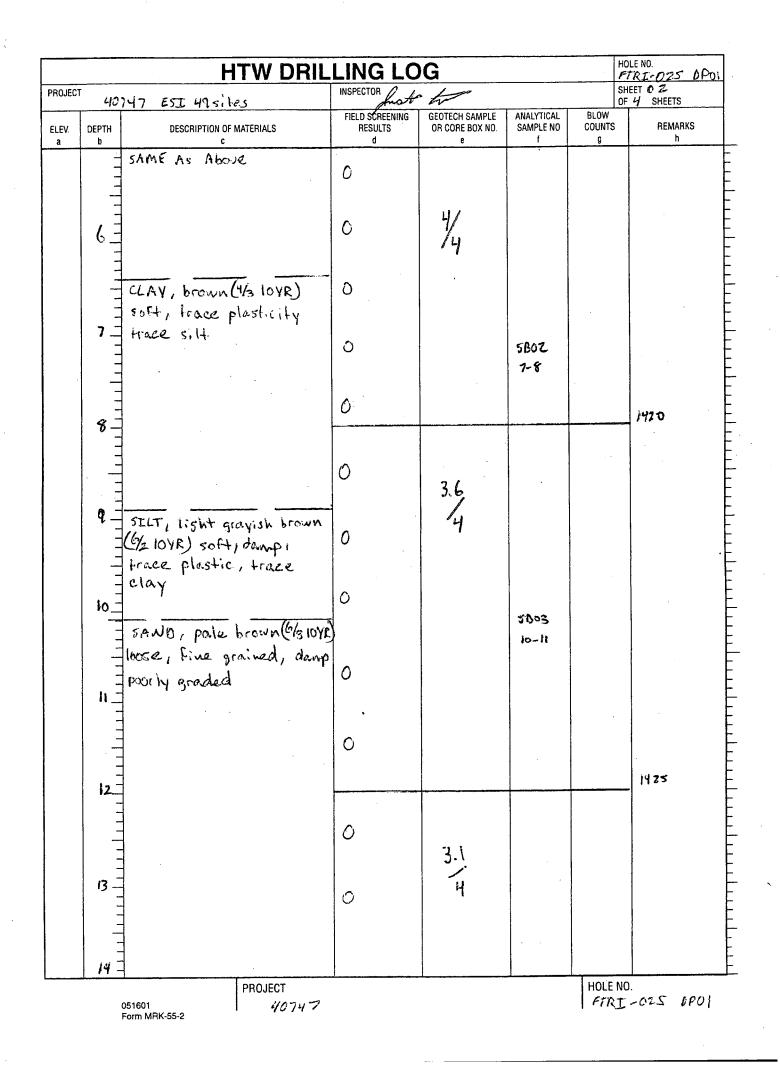


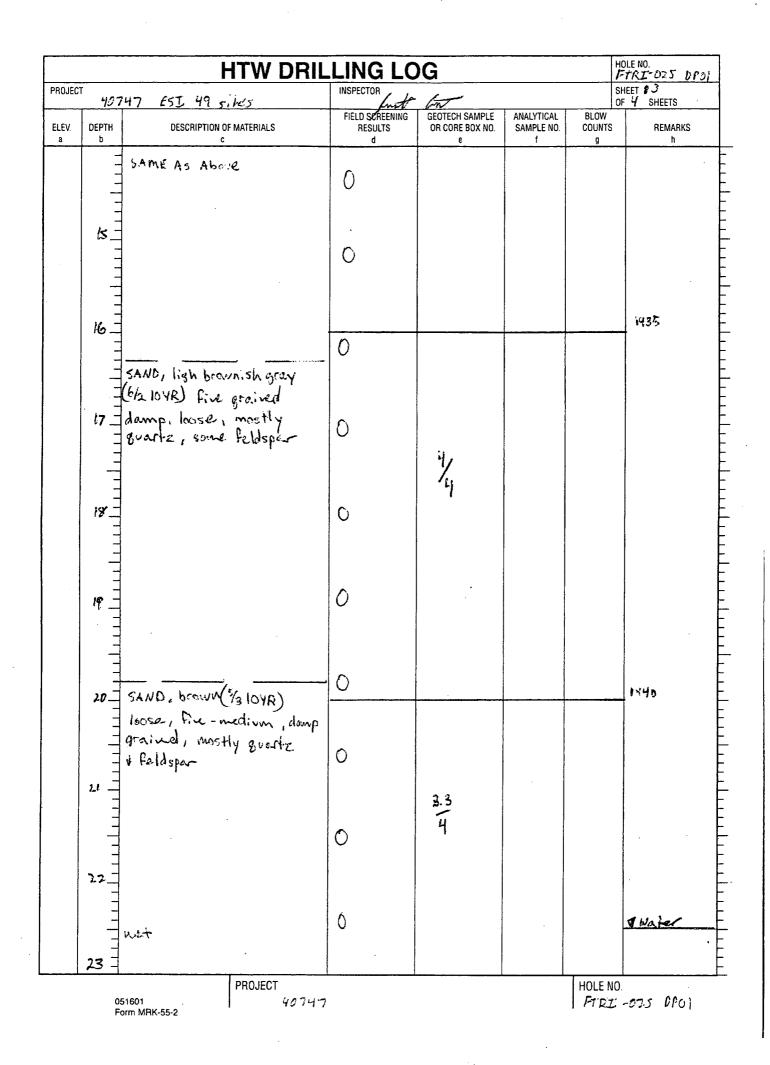
HTW DRILLING LOG										
r	407	47 EST 49 siles	INSPECTOR	m						
ELEV.	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS			
		SAME AS Above	0	•						
	:1.1.1.1.1.1	SANDI yellowish brown (5/4 104R) fin-madium, damp grained, mostly practic	0							
	2						iois			
	1111		0	3.2						
	יין	JANU light yeilowith brown (by 104R) fina-course grained men graded	0	3.2			Ø water			
	10		0							
	111		0							
			0							
	20	Buttom of hold								
	]	PROJECT 4のフィ				HOLE NO				

--

Boring Logs Main Post WWTP Sludge Drying Beds (FTRI-025)

COMMUNIC     2     Defined 345000m/cm     Set 1     Set 1       I ROBET     4     CORTON     4     Cortons     0 + Set 13       I ROBET     Convis 5     11 Cortons     1     Convis 5     11 Cortons       I ROBET     Convis 5     11 Cortons     0 + Set 13     0 + Set 13       I ROBET     Convis 5     11 Cortons     0 + Set 13     0 + Set 13       I ROBET     Convis 5     11 Cortons     0 + Set 13     0 + Set 13       I ROBET     I Cortons     11 Det Cortons     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I Soft Nonco     0 + Set 13     0 + Set 13       I ROBET     I ROBET <th></th> <th></th> <th></th> <th>HTW D</th> <th>DRILL</th> <th>ING</th> <th>i LO</th> <th>G</th> <th></th> <th></th> <th>A</th> <th>HOLE</th> <th>NO I-025 DP01</th> <th>]</th>				HTW D	DRILL	ING	i LO	G			A	HOLE	NO I-025 DP01	]
PROJECT UNITS OF PALLING DECK PROVECT UNITS OF PALLING CAPTURES AT AN ALLEY CAPTURES DESCRIPTION OF PALL DECAMONS BILLEY CAPTURES OF PALLING CAPTURES TO PALLING CAPTURES TO PALLING CAPTURES OF PALLING OF PALLING CAPTURES OF PALLING CAPTURES OF PALLING OF PALLING CAPTURES OF PALLING CAPTURES OF PALLING O	1 COMPAN				2.	DRILLING	SUBCONT	RACTOR		· · · · ·		SHEE	T 1	1
MULTICAL         EST. 49 Siles         Early construct of construction of constructing constructing construction of construction of construction of c			s + MeDo	innell		_,,,						OF	SHEETS	-
I we de Paller     CANA'S Eller     CANA'S Eller       CONN'S Eller       ONA       VIII CONNET ELLER	3. PROJEC		17 Eet.	HO elle			4. LOCA		e:L	2 . /				
OCKANGS         Filer         Cost Udation           Sees Hor Prise OPUNG         Geop pole         1200         4 Ock Udation           MD SAMPLING BOURMENT         Micrococcal.or.el         9 SUPPrice Elevitori         NA           MI Model Call.Price         9 SUPPrice Elevitori         NA           In Onits Stample         In Onits Stample         11 ONE COMPLETED           2 OVERBURENT NOMERES         NA         20/11 / 0.6           3 OPPH GRUED MIONEXES         NA         15 OPPH GRUED MIONERED         21/1 / 0.6           3 OPPH GRUED MIONEXES         NA         16 OPPH TO WATER MOLEXENTS SPECTRY         NA           4 TOTAL REPRO HALE         DETINBED         UNDSTURED         16 TOTAL NUMERE OF CORE BOXES         0           0 GOTOCHARUL MANUES         DETINBED         UNDSTURED         16 TOTAL NUMERE OF CORE BOXES         0         0           3 DEFINISHIE         DETINBEND         UNDSTURED         16 TOTAL NUMERE OF CORE BOXES         0	5 NAME O			11 3163			6. MANU	FACTURER'S D	ESIGN/	TION OF DRILL				1
Sizes AND TYPES OF DRILLING     Geop poster 1/2502     FINDEL Columnation       Y <sup>1</sup> book race 1/2102     P SUPPOSE BLEWING       Y <sup>2</sup> book race 1/2102     P SUPPOSE	0. 10010		Dennis	tller			6	eoprole			<u>h</u>			
$\begin{array}{ c c c c c } \hline \hline$				Geoptole 4200			8 HOLE	LOCATION						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	AND SA	MPLING EQUI	PMENT	4' mecrocore							<u></u>			-
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$							9 SURF							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $											11 DATE COME			-
$\begin{array}{c c c c c c c c c c c c c c c c c c c $									6		71710	6		
3. GEPTH PRILED NITO ROCK         A           4. TOTAL DEPTH OF HOLE         A           4. TOTAL DEPTH OF HOLE         A           4. TOTAL DEPTH OF HOLE         A           3. GEPTH PRILED NO FAME         DESTURBED           0. SAMPLES FOR CHEMICAL ANALYSIS         VOC           3. GEOTECHICAL SAMPLES         DESTURBED           3. GEOTECHICAL SAMPLES         VOC           3. GEOTECHICAL SAMPLES         DESTURBED           3. GEOTECHICAL SAMPLES         VOC           3. GEOTECHICAL SAMPLES         PECIDICAL SCHEMING RESCEPTION OF MATERIALS           3. GEOTECHICAL SAMPLES         DESCRIPTION OF MATERIALS           4. DESCRIPTION OF MATERIALS         PECID SCHEMING RESCHEMING RENOTE NAMPLE NAMERY ANALYTICAL BLOW SAMPLES OF INSPECTOR           4. DESCRIPTION OF MATERIALS         PECID SCHEMENT RAMES NAMERY ANALYTICAL BLOW SAMPLES OF INSPECTOR           4. DESCRIPTION OF MATERIALS         PECID SCHEMENT RAMEY ANALYTICAL BLOW SAMPLES OF INSPECTOR           3. GEOTECHICAL SCHEMENT RAMEY ANALYTICAL BLOW SAMPLES OF INSPECTOR         SECONT SAMPLES OF INSPECTOR	12. OVERB	URDEN THIC	KNESS		· · · · · ·	· · · ·	15 DEPT	TH GROUNDWA	ter en	ICOUNTERED				1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			NA						_	the second s				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	13. DEPTH	DRILLED INT					16. DEP1			APSED TIME AFT	er drilling coi	MPLETED		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							17 014							-
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	14. IUTAL	UEPTH OF H								NUNEMENIO (OP				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	18 GEOTE	CHNICAL SA		DISTURBED	UND		) 19			CORE BOXES				1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		-		ð		U -	L	0						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	20. SAMPL	ES FOR CHE	MICAL ANALYSIS	VOC	META	LS	OTHE	R (SPECIFY)	01	HER (SPECIFY)	OTHER (SI	PECIFY)		E
22. DEPOSITION OF HOLE NA BEACHLED MONTRING WELL OTHER (SPECIFY) NA BEACHLED MONTRING WELL OTHER (SPECIFY) AA BEACHLED VALUE VA VA VA VA VA VALUE		3			3		-	<b></b>						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	22. DISPO	SITION OF HO	)LE	BACKFILLED	MONITORING	G WELL	OTHE	R (SPECIFY)	23.	SIGNATURE OF IN	SPECTOR		L	1
$\frac{\text{LLP}}{a} = \frac{1}{b} =$				Paula 10	.1 ^		1		1	In	tout			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		/v,/t	· · · · · · · · · · · · · · · · · · ·	DEMONTIC	~~~~~	1					-			-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ELEV.	DEPTH	DE	ESCRIPTION OF MATERIALS									REMARKS	
$\frac{1}{3}$ $\frac{1}$		b		C			d	e ·		1	g		<u> </u>	$\bot$
$\frac{1}{3}$ $\frac{1}$		-	CLAY,	ocown (5/3)0YR	)									F
3.7 $3.7$ $3.7$ $3.7$ $4$ $3.7$ $3.7$ $3.7$ $3.7$ $3.7$ $3.7$ $3.7$ $3.7$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $3.7$ $4$ $4$ $3.7$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$	•					10				SBOI				F
3.7 $3.7$ $4$ $3.7$ $0$ $4$ $3.7$ $0$ $4$ $3.7$ $0$ $4$ $3.7$ $0$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$ $4$										0-1				F
$3 = \frac{3.7}{4}$ $0$ $4 = \frac{1}{1000}$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$			51-147, 1	race siH										Ē
$3 = \frac{3.7}{4}$ $0$ $4 = \frac{1}{1000}$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$		<u> </u>				0								F
2 STLT, brown (5/3 10 YR) 3 damp; soft; non plastic soft, some skhd; trace clay 4 HOLE NO PROJECT O HOLE NO						Ĭ								F
2 STLT, brown (5/3 10 YR) 3 damp; soft; non plastic soft, some skhd; trace clay 4 HOLE NO PROJECT O HOLE NO								27						E
2     STLT, brown (\$/3 10'YR)     0       3     damp; soft; non plastic     0       soft, some sind; trace     0       4     0       4     0								3.7					,	F
2     STLT, brown (\$/3 10'YR)     0       3     damp; soft; non plastic     0       soft, some sind; trace     0       4     0       4     0						0		-4						F
3 - damp; soft; non plastic soft; some sähd; trace ciay 4		<u>,</u>				1 ~		1						F
3 - damp; soft; non plastic soft; some sähd; trace ciay 4														þ
3 - damp; soft; non plastic soft; some sähd; trace ciay 4		1						ľ						F
3 - damp; soft; non plastic soft; some sähd; trace ciay 4			CTIT (	- Ist solu	<u>_</u>									F
4     0     1415       9     1415     0       1     0     1415       1     0     1415			11110	rown (2/3 10 y	r)									F
4     0     1415       9     1415     0       1     0     1415       1     0     1415		3	damp;	soft i non pl	astic									F
4     0     1415       9     1415     0       1     0     1415       1     0     1415			soft, so	ome sailed, to	212									F
4         0         1415           1         0         1415           1         0         1415           1         0         1415			clay	ł										F
4         -			r											F
						0								F
PROJECT HOLE NO.		4 <u>-</u>	÷					al der die opperatie				1415		F
PROJECT HOLE NO.		' _												F
PROJECT HOLE NO.						1								F
						0								F
														F
		-						<u> </u>			L	l		上
		084	. F								1			





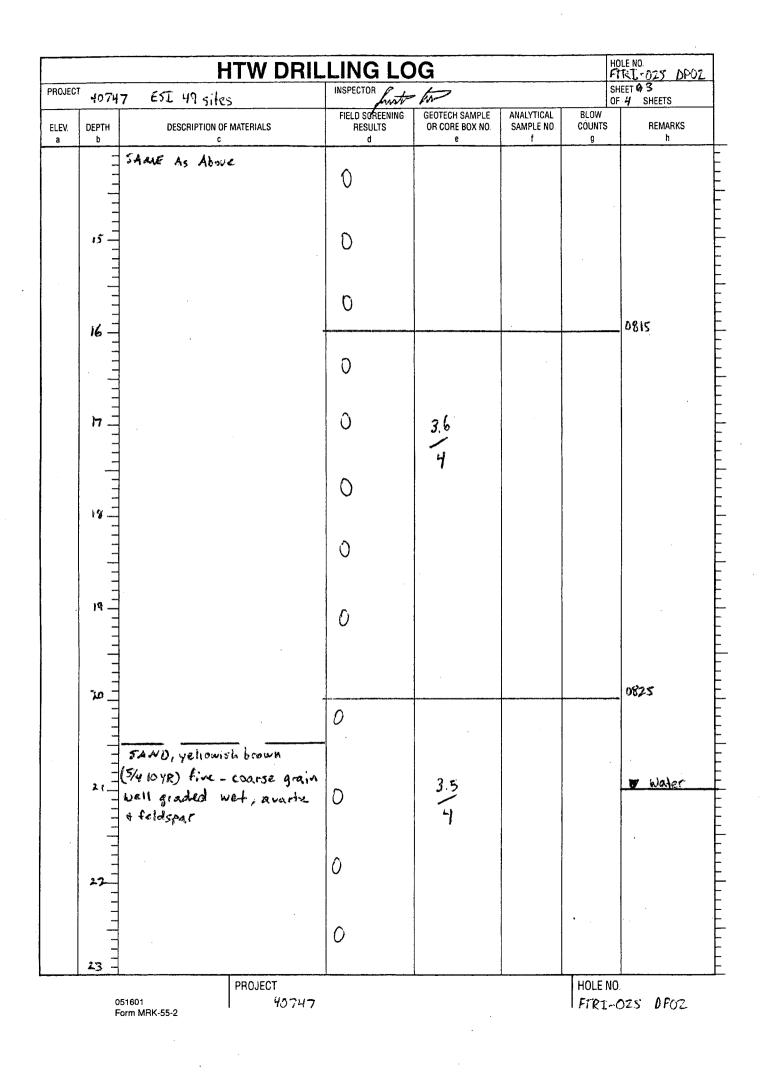
	но <i>[</i> -1	HOLE NO FTRE-025 DFOI							
PROJECT	407-	17 ESI 49 silies		INSPECTOR	las		SH OF	EET # 4 4 Sheets	
ELEV. a	DEPTH b	DESCRIPTION OF MA	TERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h	
		same as above		ð				1450	
	ź 4 – –	Bottom of hule							
				•					
					•				
•			· .						
L	<u> </u>	051601 Form MRK-55-2	PROJECT りかりょう				HOLEN	0. -025 DPUI	

č

·

···			HTW [	DRILL	ING	LO	G				HOLE	NO. I-025 DP07
1. COMPA	NY NAME				DRILLING S		RACTOR				SHEE	T 1
3. PROJE		ms + MeD			4	LOCA	TION	25				SHEETS
		40747 E	SI 49 sites			- MAANI	FOR+			۰. 		
5. NAME (	F DRILLER	Dennis	Eiler		t		200000Le		Direct Po	sk		
	ND TYPES O MPLING EQU		Geoprole 42			B. HOLE	LOCATION					
AND 5	MPLING EQU		41 maerocor	2		). Surf	ACE ELEVATION					
			· · · · · · · · · · · · · · · · · · ·			0.047	NA_		r	11. DATE COMP		
					<sup>'</sup>		started <b>5</b> 71710	6		7/7/0		
12. OVER	BURDEN THIC				1	15. DEPT	TH GROUNDWAT	rer en Q1	COUNTERED			· ·
13 DEPTI	DRILLED IN		JA			16. DEP		ND EL	APSED TIME AFT	ER DRILLING CON	IPLETED	
			A					VA I MEA	SUREMENTS (SP			
14. IUIA	DEPTH OF I	10LE	4				N.	٩				
18. GEOT	CHNICAL SA	MPLES	DISTURBED		STURBED	11	9. TOTAL NUME O	BER OF	CORE BOXES			
20. Samp	ES FOR CH	EMICAL ANALYSIS	VOC	METAL		OTHE	R (SPECIFY)	OT	HER (SPECIFY)	OTHER (SF	ECIFY)	21. TOTAL CORE
	.3		-	3	Ì	-	~					RECOVERY %
22. DISPO	SITION OF H		BACKFILLED	MONITORING	i Well	OTHE	r (specify)	23. 5		-		
	A VA	۱ 	Bentowite	NA		N,	٩		fusto i	and		
ELEV. a	DEPTH b		ESCRIPTION OF MATERIALS		FIELD SCF RESU d	ILTS	GEOTECH SA OR CORE BO e		ANALYTICAL SAMPLE NO. f	BLOW COUNTS g		REMARKS h
- <u></u>	=	Fill Clay	Wgravel own (43 10 VR) d stic, trace cla									
	-	5:14 h.	(4/- in ho) -		0							
		non plas	stic trace ala						:			·
	;	soft	,	7								
	-				0		3.8		SBOI			
					ľ		4		1-21			
	=	· ·										
	2							-				
	=				0							
		1			0							
	3	4										
		5.44	e brown (43 10		1							
		ner, pau	the line l	IK) Ory								
		sand, si	itic, trace <b>b</b> l	ay, trace	0							
	4		-w · 1						<u> </u>		C <b>7</b> 55	
	=											
					0							
		]			ľ				1	1	1	
	_	4										

HOLE NO. **HTW DRILLING LOG** FTRE- 025 SHEET 0 2-OF 4 SHEETS DF07 INSPECTOR PROJECT ESI 49 siles an 40747 GEOTECH SAMPLE OR CORE BOX NO. FIELD SCREENING RESULTS ANALYTICAL BLOW REMARKS SAMPLE NO COUNTS DEPTH DESCRIPTION OF MATERIALS ELEV. d f g h e b с а SAND, light gray (1/2 love) 0 loose, dry, time grained 6 0 4/4 CLAY, Very dark gravish SBOZ brown (3/2 104R) damp, 6.5-7.5 0 stiff, medium plasticity 7 0 Silt, pale brown (6/3 104R) 0800 ş damp, trace plasticity Soft. 0 9 3.1 1 1 SAND, yellowish brown 0 (5/4 IOVR) loose, damp fire graited, poorly graded 10 0 0 h 5803 11-12 0 0805 12 0 34 13 0 14 HOLE NO. PROJECT FTRI-025 DPOZ 051601 40747 Form MRK-55-2



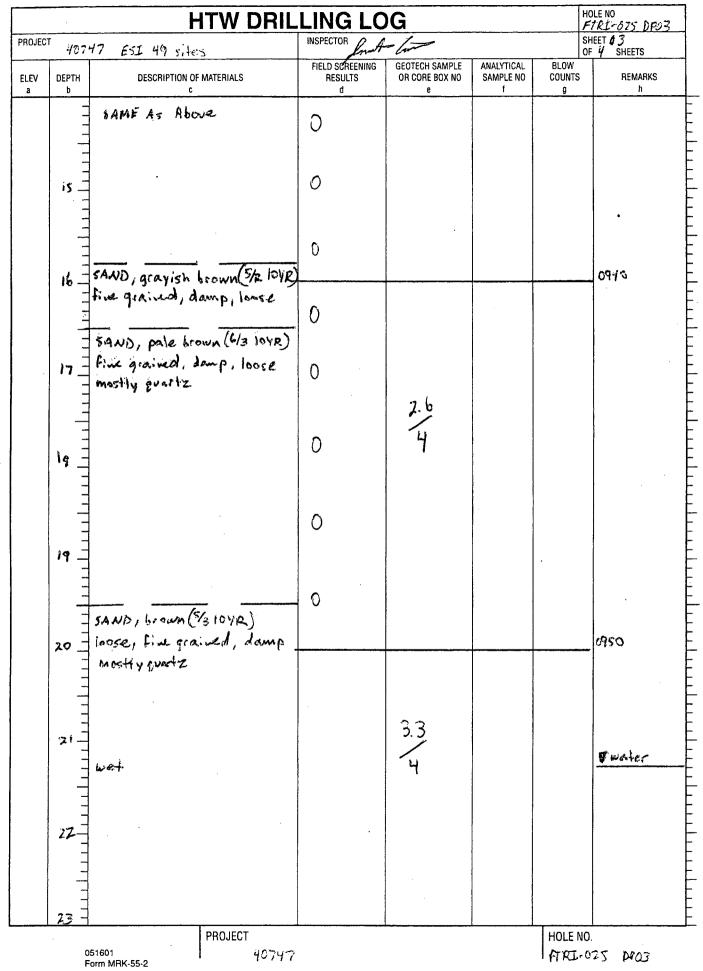
		HTW DR			нс <i>F</i>	ILE NO. TRI-025 DF0Z-			
PROJECT	407:	17 ESI 49 siles	INSPECTOR fust	<i></i>		OF	SHEET & H OF H SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS g	REMARKS ħ		
		same as Above	0				0835		
	24				<i>.</i>				
	1111111111								
		· · ·							
	1111111111								
		``		•					
L		51601 4	0747.			HOLE NO	025 DP0Z-		

I

2

			HTW		ING LO				HOLE N	0 - 075 DAT
1. COMP	any name Burn	s t MeD	oinnell	2	DRILLING SUBCO	NTRACTOR EPS			SHEET	
3. PROJE	er 4c	147 255	49 siles		4. LOC	Fort Ri	10.1	<del></del>		
5. NAME	OF DRILLER			<u></u> .	6 MA	UFACTURER'S DES	SIGNATION OF DRILL			
		Denn.s					le / Direct	Fush		
	AND TYPES ( AMPLING EQI		Genprofe 4203 4'macrocore	····	8. HOL	E LOCATION んへ				
		ĺ	T MOCCOLOT C		9. SUF	FACE ELEVATION				
						NA	•			
		·			10. DA	TE STARTED		11. DATE COMPI 7/7/06		
2 OVER	BURDEN THI	CKNESS			15. DE	PTH GROUNDWATE				····
0 0507	H DRILLED IN		NA	·		21.3			·	
J. DEPI	h drilled in		NA		16 DE	PTH TO WATER AN	d elapsed time af	TER DRILLING COM	PLETED	
4. TOTA	l depth of	HOLE			17. OT	HER WATER LEVEL	MEASUREMENTS (S	PECIFY)		
8 GEOT	ECHNICAL SA		DISTURBED	LIND	STURBED		R OF CORE BOXES	<u></u>		
		0	0		0		n ur uure Buxes			
.O. SAMF	LES FOR CHI	EMICAL ANALYSI	s voc	METAI	.S OTH	ER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPI	CIFY) 2	1. TOTAL CORE
		3	-	3			<del>d'annia</del> 1			RECOVERY %
2. DISPO	SITION OF H	OLE	BACKFILLED	MONITORING	WELL OTH	ER (SPECIFY) 2	3. SIGNATURE OF I	NSPECTOR		
	NA		Bentonite	NA	,	JA A	fut to	N		
ELEV a	DEPTH b		DESCRIPTION OF MATERIALS		FIELD SCREENING RESULTS d	GEOTECH SAMP OR CORE BOX I e		BLOW COUNTS 9		MARKS h
	-	CLAY,	brown (4/3 10 YR	)						<u> </u>
	=	damo;	trace plasticit	- V i	0					
		medium	trace plasticit	,,	U					
			,					i.		
					0	4		{ }		
					Ū	14				
							SBOI			
					0		1-Z			
	2				Ŭ					
		SILT, I	rown (5/3 104R)	dayo						
		Frace	plasticity, soft		0					
		trace c		·	V					
	3	·	l l							
					0					
	-									
ĺ								0	925	
	4					1				
	4									
	4 				0			. •		
	¥				0			. •		

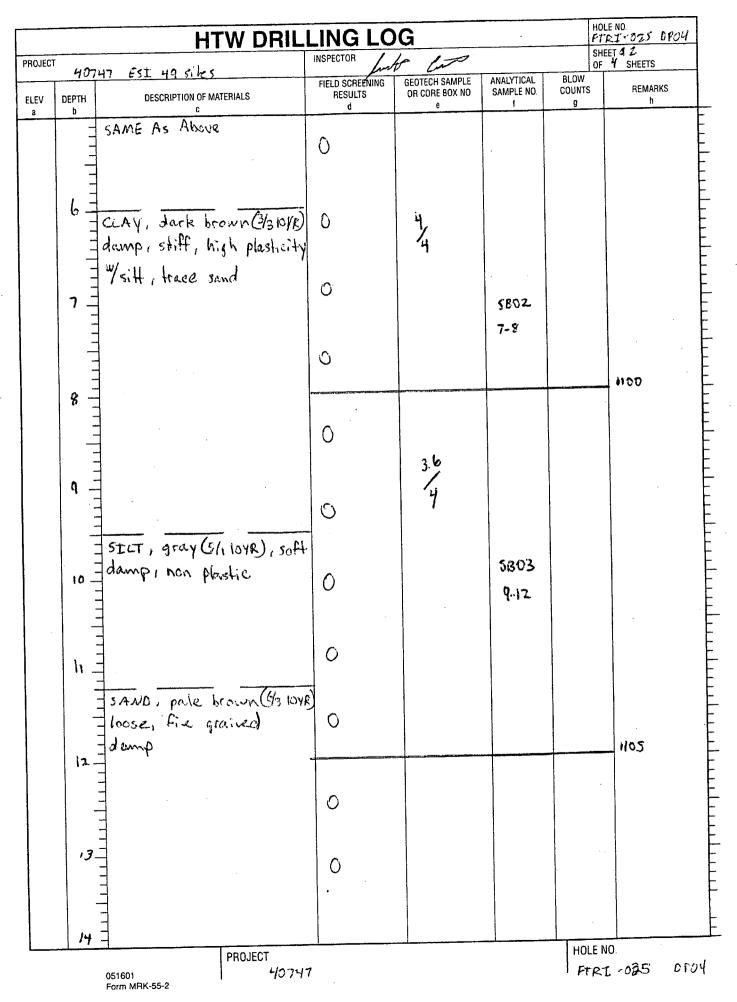
HTW DRILLING LOG HOLE NO. FTRI- 025 DR03 SHEET & Z										
OJECT	4	0747 ESI 49 sites	fin	6.2		0	OF 4 SHEETS			
EV. D	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCRÉENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS h			
		SAME AS About	0							
				4,						
			0	"4						
		CLAY, brown (4/3104R) damp roft, medium plasticity	0							
	7	wy sitt			5802					
		•	0		7-4					
	8	-	3.4				C930			
			7.2							
1	<b>م</b>	CLAY, black (7/1 10YR) soft medium plasticity; hydro odor carbon	35.2	3.7	51303 8.5-9.5					
		SICT, gravish brown (5/2 104R) soft, damp non plastic	0	4						
	5 5	SAND, pale brown (6/310VR) 1005E fine grained, dump poorly graded	0							
	•1		0							
		· ·					0935			
	12		0	3.]						
	i3		0	3.1						



		HOLE NO. FTRI -075 DECO SHEET OF 4 OF 4 SHEETS						
PROJEC	r 4374	17		INSPECTOR for	17			SHEET & F + OF 4 SHEETS
ELEV. a	DEPTH b	DESCRIPTION OF I	MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	
-		SAME AS Abour				•	•	1000
			•					
			· · ·					
							1.00.5	
		051601 Form MBK-55-2	PROJECT 40747				HOLE I	NO. 1-025 OF03

		-	HTW I	DRILL	ING L	LOG		·		HOLE	NO. 2-025 DF04
1. COMPAN	Y NAME	<u></u>	<u></u>	2.	DRILLING SUB	CONTRACTOR		<u> </u>		SHEE	Γ1 <b>Γ</b>
3. PROJECT	_	ns y Me	Donnell		4	EPS				OF	SHEETS
3. PROJECT		0747 E	SI 49 siles		4.	Fort Ri	ev.				
5. NAME OF		Dennis			6	MANUFACTURE	'S DESIGN	ATION OF DRILL			
						HOLE LOCATIO		rohe / Dir.	ect Ksh		
7. SIZES AN AND SAM	ND TYPES O APLING EQU		Geophile 4200 4' macrocore		°.						
		ľ			9. :	SURFACE ELEV	TION	· · ·			
		ļ						<b>_</b>			<u></u>
		ŀ	·····		10.	DATE STARTE	7106		11. DATE COMP 7/7/06	LEIED	
12 OVERBL	URDEN THIC	KNESS	······································	· · · · · · · · · · · · · · · · · · ·	15.	DEPTH GROU		NCOUNTERED			
			JA				225				
13 DEPTH I	DRILLED INT		١٨		16.	. Depth to W/	ier and el NA	APSED TIME AFT	ER DRILLING CO	MPLETED	
14. TOTAL I	DEPTH OF H		A A 1		17.	OTHER WATE	LEVEL ME	ASUREMENTS (SP	ECIFY)		
			24				NA				
18. GEOTEC	CHNICAL SA	MPLES の	DISTURBED		Sturbed Ø	19. TOTAL	Number of O	F CORE BOXES			
20. SAMPLE	ES FOR CHE	MICAL ANALYS		METAL		OTHER (SPECIF		THER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE
	3			3	<b>T</b> _					•	RECOVERY %
22 DISPOS	-		BACKFILLED	MONITORING	WELL	OTHER (SPECIF	1 23	SIGNATURE OF IN	SPECTOR		70
TE DIOLOG		er unden				NA	<u></u>	funter 1			
r	NA		Bentonite	NA						r	
ELEV., 8	DEPTH b		DESCRIPTION OF MATERIALS		FIELD SCREE RESULT		H SAMPLE E BOX NO. e	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS g	1	REMARKS h
		CLAY -	brown (4/3 DVF	), dama				1			
	-	medium	a plastic L.	Je starter F	0						
		traze	n plasticity, m silt, trace gro		-						
	-	roots	sim i rease gro	22							
	i	10010			0			<b> </b>			
	-					3.1					
•	_					/		580)			
					0			1-2			
	, -							1 4.			
	/										
	_										
		SECT	brown (4/3 104F	) dama	0						
		how o		y www.p							
	3	i.	lastic, soft. clay								
	=	frace.	clay		0						
	-									ł	
	-										
	H —									1055	
	-				0						
	-										
1					1	1		1	l	1	
	5 =							1			

• .



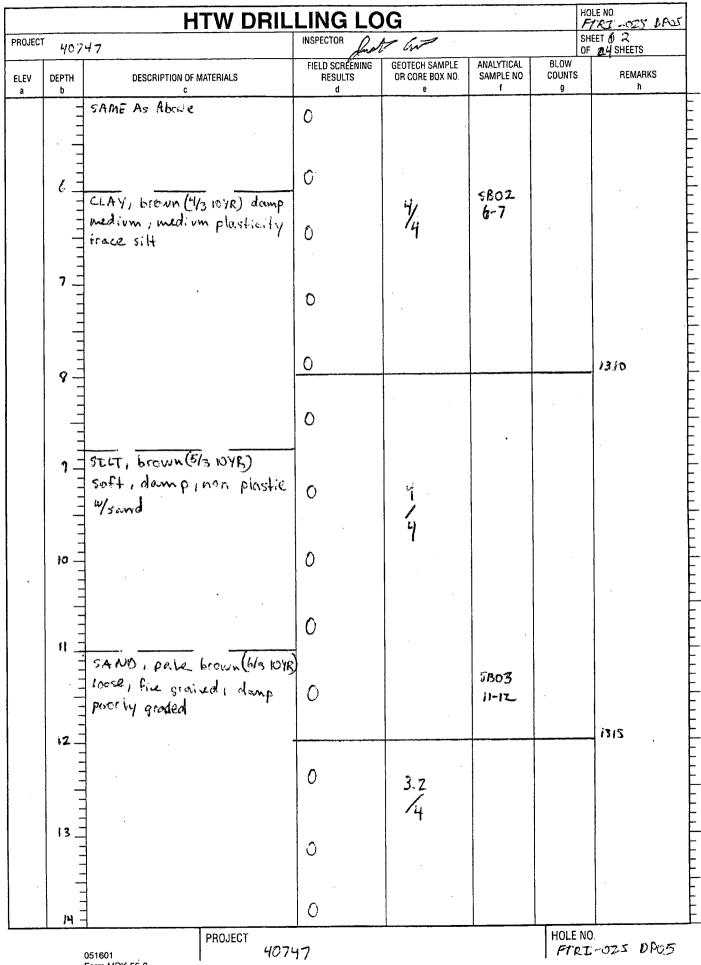
ROJEC	T i.e.	HTW DRIL	LING LO	DG Im			HOLE NO. <u>PTRI 025 DP04</u> SHEET J 3
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS	OF 4 SHEETS REMARKS
a	b 	same as hove	d O	e	f		
			0	7.4 /5			
		SAND, dark gravish brown	. 0				1112
		SAND, dark gravish brown (5/2 10YR) fine - medium grained, demp, loose-	0				
	<b>n</b>		0				
	18 -	SAND, pahe brown (6/3 10YR File-medium graind dump, loose mostly	0	4/4			
	19	quartz	0		· · · · ·		
			0				
	20	SAND, brown (4/3 104R)	0				
	21	SAND, brown (4/3 104R) Fine grained, loose, damp mostly quarte	0	4			
			0				
		wet	0				Woter -

,

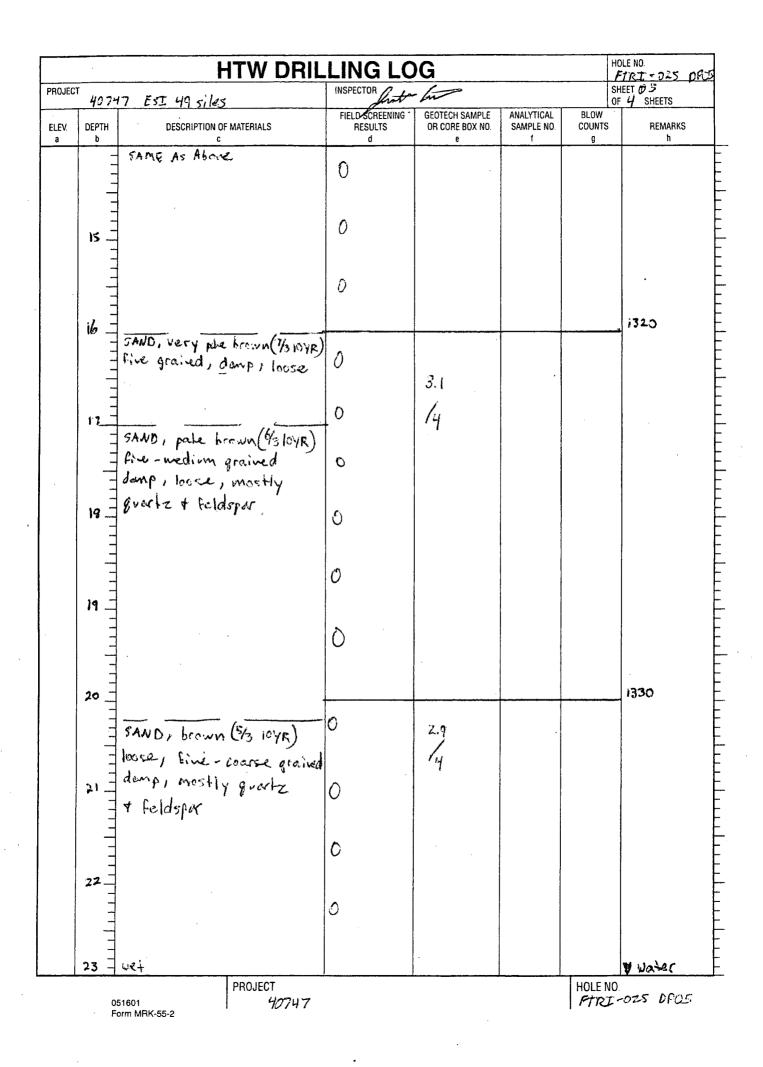
		HTW DRI	ILLING LOG HOLE NO. Frrt-025							
PROJECT		40747	j	7 Gar		SH OF	EET C 4 4 SHEETS			
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h			
	-	same As Ahove								
	-	•								
	-		0							
	24_						1140			
		Bottom of hole								
			-							
	-									
							· · ·			
							1 · · · ·			
•	_									
	-									
		· · · · · · · · · · · · · · · · · · ·				- <u></u>	]			
		051601 PROJECT Form MBK-55-2				HOLE NO	ozs DP04			

			HTW [	DRILL	ING	LO	G				HOLE	NO 1-025 NP:	5
1. COMPA	NY NAME	Burns & M	n Davis a Ji	2.	DRILLING	SUBCONTI					SHEE		4
3. PROJEC	T			l		4. LOCAT					[Ur	SHEETS	-
	4	0747 ESI	49 sites				Fort Ri						
5. NAME C	of Driller	Dennis E	lipe						TION OF DRILL	1.			
7. SIZES A	ND TYPES OF		SepproLe 4200	)		8. HOLE	LOCATION	10	11601 145	<u></u>	•		
AND SA	MPLING EQU		41 macrocore				NA						_
						9. SURFA		ł					
						10. DATE	STARTED			11. DATE COM	PLETED	·	
			······					<u>ר/ר</u>		717/0	6	<u></u>	
12 OVER	Burden Thic	KNESS 🔊 🔨 🛧				15. DEPT	H GROUNDWA	ter en 13	ICOUNTERED				
13. DEPTH	I DRILLED INT	O ROCK				16. DEPT	H TO WATER	and el	APSED TIME AFT	ER DRILLING CO	MPLETED		
	DEPTH OF H					17. OTH		Contraction of the local division of the loc	NA ASUREMENTS (SP	ECIFY)	•		-
14. 10176		24						N	A				
18. GEOTE	ECHNICAL SA				sturbed Ó	19	TOTAL NUM	BER OF	CORE BOXES				
20. SAMPL	<u> </u>	MICAL ANALYSIS	VOC	METAL	-	OTHEF	R (SPECIFY)	10	HER (SPECIFY)	OTHER (S	PECIFY)	21 TOTAL CO	
	3			3		1	~				•	RECOVER	
22 DISPO	SITION OF HO	)LE	BACKFILLED	MONITORING	WELL	OTHER	R (SPECIFY)	23 3	SIGNATURE OF IN	SPECTOR			
	NĄ		Bentonile	NA		N	A		fut a	N			
ELEV	DEPTH	DES	SCRIPTION OF MATERIALS	L	RES	CREENING WLTS d	GEOTECH SA OR CORE BC		ANALYTICAL SAMPLE NO. f	BLOW COUNTS		REMARKS	
	-	CLAY . I	orown (4/3 10	VRÌ	<u> </u>								E
•		dame.	Lorg Mad		0								E
		medi	trace plast:	city	Ĭ								F
		rocts	i made gra	485			3.7						Ē
					0		4						E
							4		5801				· E
									1-2				F
													Ē
	2 _				0								E
		SILT, di	ark gravish	prown									F
	7	(4/2.104R	) dama, to	ale									E
		plastivit	) damp, tr	800	0								F
		clay	17 33-07 42										F
	^						i						F
											ļ		E
	-]				0								F
													F
	4										1305	,	F
	]												F
													F
													F
	5 -												E
	ORM 55	PF	HOJECT 40747	,				_		HOLE NO		DPOS	
IVINK JU	CC 68 M	ł								<sup>-</sup>   K.e	- 020	NFUD	

,



Form MRK-55-2



		H	TW DRIL	LING LC	G		HO FT	ILE NO	DPCS
PROJECT	40	747 ESI 49 silie		INSPECTOR JATU C	ACTER		SH OF	EET + 4 4 SHEE	rs
ELEV. a	DEPTH b	DESCRIPTION OF I		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g		IARKS h
		stame as About	2	0			-		
	24	Bottom of note							
									l F
۱	<u></u>	051601 Form MBK-55-2	project 4074	7	<u></u>	- <u>L</u>	HOLE NO	-025	DPOS

RK-55-2

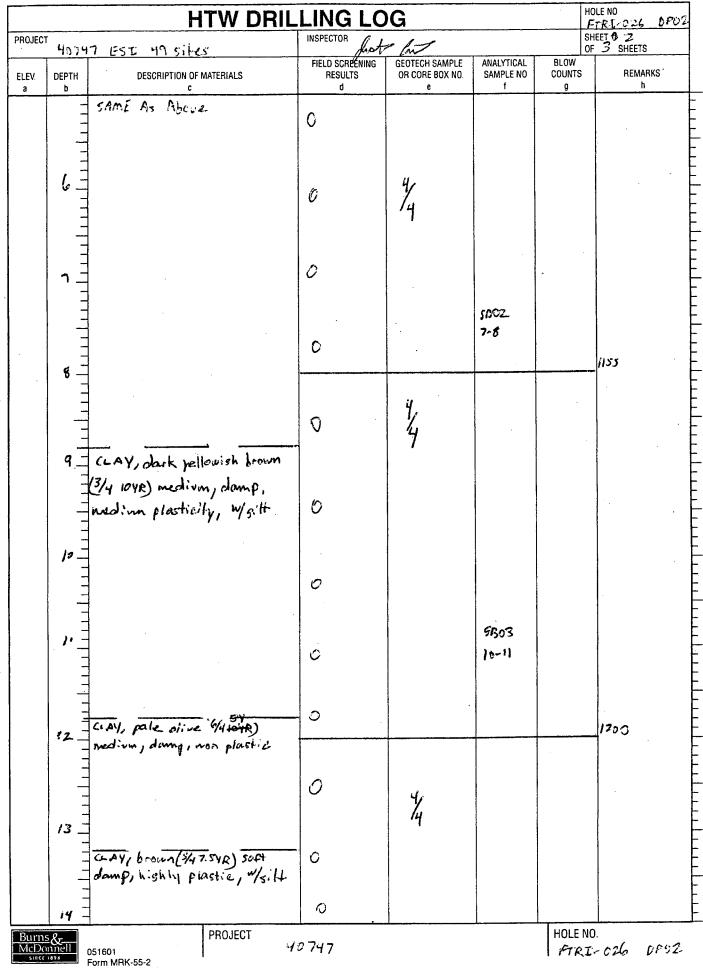
. `

Boring Logs Range Complex Wastewater Lagoons (FTRI-026)

		. <u> </u>		HTW C	DRILL	NG	LO	G			<u></u>	HOLE	NO. [-026 ]] PU1
I. COMPAN	IY NAME	Barr	i iA	eDownell	2.	DRILLING	SUBCONTR	ACTOR E	PS			SHEE	T 1 Sheets
3. PROJECT	T				<u>_</u>		4 LOCATI	 ON				4	
		4074	7	ESI 49 siles	3	_	6 MANUE		R.L	Z.Y			
5. NAME OF	f driller	Denr	N'S E	1120						et fusin			
	ND TYPES OF		62	aprole 5400			8. HOLE L						
AND SAN	APLING EQUI	PMENT	41	MARTOCOTE	<u></u>			NA CE ELEVATION					
				<u></u>			9. OURIA	NA					
							10 DATE	STARTED 7119	1.(	·	11. DATE COMI 7/19		
	URDEN THICI	(NESS					15 DEPT	I GROUNDWA			111-1	12.61	
		<u>A LA</u>						NA				<u> </u>	····
13 DEPTH	DRILLED INT						16 DEPT	i to water A N A	ND EL	APSED TIME AFTE	R DRILLING CO	MPLETED	
14 TOTAL	DEPTH OF H						17. OTHE		EL MEA	SUREMENTS (SPE	ECIFY)	····	
		12	2.5				L	NA					
18. GEOTE	CHNICAL SAI	MPLES O		Disturbed D		Sturbed	19		Ber of	CORE BOXES			
20. SAMPLI	ES FOR CHE	MICAL ANALY	SIS	VOC	METAL		OTHER	(SPECIFY)	ОТ	HER (SPECIFY)	OTHER (S	PECIFY)	21 TOTAL CORE
		3	-		3		-				-		RECOVERY %
22. DISPOS	SITION OF HO			BACKFILLED	MONITORING	WELL	OTHER	(SPECIFY)	23. 8	SIGNATURE OF IN	SPECTOR		L
	,	AL	F	Bentonile	Tempers Piezon	N	N	A		for the			
			I		Prezon	FIELD S	CREENING	GEOTECH SA	MPLE	ANALYTICAL	BLOW	[	
ELEV	DEPTH b		DESCR	RIPTION OF MATERIALS		RE	SULTS d	OR CORE BO	IX NO	SAMPLE NO.	COUNTS 9	ļ	REMARKS h
		700 50		14(									
		CLAY, 6 Pair pla		n (YsiovR) dr	Y, SECH	0							
		ran pi	w prc					3.8					
								3.8		SBOI			
	'					0		4		1-Z			
				dark grayis									
		(3/21041	R) $d$	mp, medium	Υ.								
		non p	is chi	e, trace si	14	0							
	2					Ĭ							
	1												
	-												
						0							
	3 -												
						0							
		2				Ĭ							
		CLAY,	Jery	dark grayist	h brown	1						1245	
	<b>4</b>	3/2 10YR	1,501	ft, damp, me	dium				<u>.</u>	<u> </u>		,273	
		plastic	sity	·						1			
						0							
						ľ							
						·		1					
	1									L I			

PROJEC		HTW DRIL	LING LC	G		F	IOLE NO. T <u>FFL: 07</u> HEET & 2	6 D
	40	747 EST: 49 siles	but	- lin	1		IF 2 SHEE	TS
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCRÉENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REN	MARKS h
			0					
			-	3.8				
	6 -		U	4		•		
		& CLAY, dark yellowish brown				•		÷
	7 -	(316 iovia) soft, damp, highly plastic, trace sitt	0		5502			
			0		7-9			
	8 -						1750	
			0					
	9_							
			0	3.6				
	jo		C					
		/						
	<u>n -</u> 	CLAY, pale ofive (\$454) damps indivin, medium plasticity						
			0		5803 11-12		:05-	
	12-	SECT, brownish yellow (4610YR) _ SLIFF, damp, non plastic,		4.2.			1255	
		Melay trace shale	0	0.5			1300	
		Refusal, Bottom of hohe Sot temperary piezometer						
			. · · ·					
Burns McDo since	nnell (	PROJECT 4071	H7			HOLE NO	). - c 26	OF (

			HTW C	DRILL	ING	i LO	G		· · · · · · · · · · · · · · · · · · ·		1	NO. 2-925 jp02	
1. COMPA	NY NAME	Brance and Dava	C., . 34	2.	DRILLING	SUBCONT	RACTOR				SHEE		1
3. PROJEC	T	Burner N Me			·	4. LOCAT	ION						1
5. NAME C		17 ÉST 49		<del></del>		6. MANU	Fort 6	ESIGN	TION OF DRILL		<i></i>		-
D. NAME C		Dannis E							real fush				
	ND TYPES O		200012 5400			8. HOLE							
			1 macrocord			9. SURFA	CE ELEVATION	ł					1
						]	NA						4
							STARTED	5		11. DATE COM 7/19/	26		
12. OVERE	BURDEN THIC		•				H GROUNDWA						1
13 DEPTH	DRILLED INT	N.A.				16 DEPT		AND EL	APSED TIME AFTE	R DRILLING CO	MPLETED		$\left\{ \right.$
		NA NA					NA						
14. TOTAL	DEPTH OF H	IOLE 16.2	;			17. OTHE	R WATER LEV	el me	ASUREMENTS (SP	ECIFY)			
18. GEOTE	CHNICAL SA	MPLES C	DISTURBED	UNDI C	Isturbei	) 19	. TOTAL NUM C	BER OI	F CORE BOXES				
20. SAMPI	ES FOR CHE	MICAL ANALYSIS	VOC	METAI		OTHEF	R (SPECIFY)	0	THER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE	1
		3		З			-					RECOVERY %	
22. DISPO	SITION OF HO	)LE	BACKFILLED	MONITORING	S WELL	OTHEF	(SPECIFY)	23.	SIGNATURE OF IN			L	1
		NA	Bentonite	Tempora Piczowa	Her	N	A	1	half Gr				
ELEV. a	DEPTH b	DES	SCRIPTION OF MATERIALS			SCREENING SULTS d	GEOTECH SA OR CORE BC e		ANALYTICAL SAMPLE NO f	BLOW COUNTS g		REMARKS h	
· <u></u>	-			÷		÷.							F
	-	CLAV I	(4/2 1048)	<1.CL	0								E
		Law	own (4/3 104R) n plastic	J 11 - 7			3.2		5801				ŧ
		- mpj co	n prastie				3.2		1-2				-
					0		4						E
													þ
													E
	, ]				0								F
	<b>*</b>												E
													F
										-			F
	3 -				0								E
	<sup>°</sup>												F
	-												E
					0								╞
			k brown (3/310 YA	Y114									Ē
	4	dampi 1.00	ice plasticity								1155		F
													þ
					0								E
1													E
	5 -												Ł
MRK J	ORM 55	PF	ROJECT 40747	7						HOLE NO.	. 026	droz	



		HTW	DRIL	LING LC	)G		HC F2	DLE NO. <u>RT-026 DFU</u> IEET <b>F</b> 3 <u>3 SHEETS</u>
PROJECT	40	747 EST 49 siles		INSPECTOR	ho		SH OF	EET マッ ろ SHEETS
ELEV. a	DEPTH	. DESCRIPTION OF MATERIALS		FIELD'SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	-	SAME AS Above		0				
	-			U				
	-							
	is _			0				
	1 1 1							
				0				1205
	· · · · ·	SELT, brownish yellow (bits soft, domp, non plastic "	10 VR) _ Meley					
		trace shell		16-242.452 - 172-844.4527.96-86-867.5C-5C-1				1217
		Refusal Bottom of hold Set a temporary plazomete	_					
	די	SZF & TEMPOTORY PRODUCT	κ.					
	-							
						:		
	18 _							
	-		,					
	19 _			L. L.				
	-					i		•
		1						- - -
	. —							
	-							
	-							
		-	i					
	-							
	-							
	-							
	-	T					1.1.4	
<u>Burns</u> McDor	&	PROJEC1 من	r 10747				HOLE NO	026 DF02

•

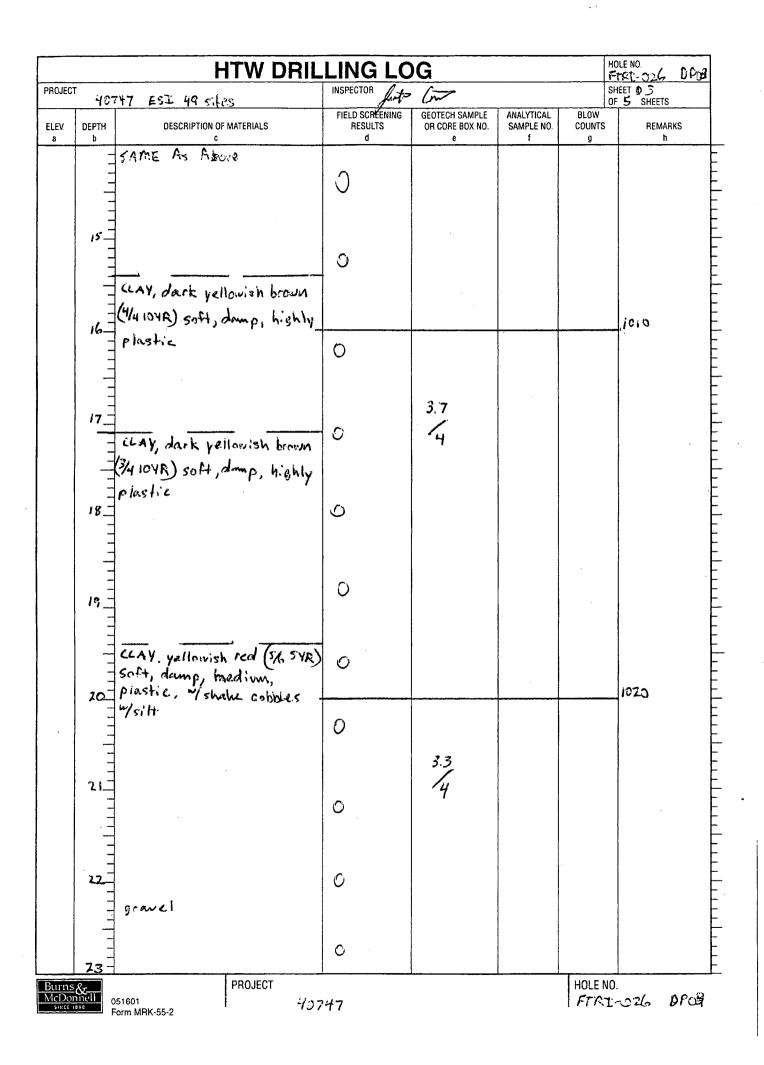
			HTW I		ING	10	G		•	,	HOLE	
											SHEET	2-026 DPG
COMPA	NY NAME	BUSNS & P	hebrandli	2.			EF	<u>ر</u>				SHEETS
B. PROJEC	л.					4. LOCAT						
	OF ORILLER	49747				6. MANUF	EPS ACTURER'S D	ESIGNA	TION OF DRILL	· · ·		
		Dennis É	ller			(	Seoprole		ineet fuel	^		
	AND TYPES O		Geoprete 540			8 HOLE 1						
AND SA	Ampling Equ		H' macro core	<u>.</u>		9. SURFA	NA CE ELEVATION	N				
							NA		<u> </u>			
						10. DATE	STARTED	106	1	1. DATE COM	PLETED	
2. OVER	BURDEN THIC	I	<u></u> .			15 DEPT	H GROUNDWA				1100	
		NA					<u>NA</u>					
13. DEPTH	H DRILLED IN	TO ROCK りん				16 DEPT	N-C	AND EL	APSED TIME AFTE	R DHILLING CO	MPLEIED	
4. TOTAL	L DEPTH OF H	HOLE				17 OTHE		'el mea	SUREMENTS (SPE	CIFY)		
	ECHNICAL SA	32	7 . DISTURBED			10			CORE BOXES	<u></u>		
	JUTINIUAL SA	O						<u>O</u>		<b></b> ;		
20. SAMP	Les for Che	EMICAL ANALYSIS	VOC	METAI	S	OTHER	(SPECIFY)	OT	HER (SPECIFY)	OTHER (S	PECIFY)	21. TOTAL CORE RECOVERY
	•	3		3						1		%
22. DISPO	SITION OF H		BACKFILLED	MONITORING		OTHER	(SPECIFY)	23 8	SIGNATURE OF INS			
		AU	Bentonile	Tompola Piezon	eter	N	A		fint	m		
ELEV.	DEPTH	DE			RES		GEOTECH SA OR CORE BO		ANALYTICAL SAMPLE NO	BLOW COUNTS 9	1	REMARKS h
	-	τορ συλ										
	· =	CLAY Brow	un ( $4/3$ love) d	541	6							
		sery stiff	, M. phal 2		1		2		5601			
	-	ding al	<u>, ma obstre</u> rk brown (3/310 Af, Irace plu				3.2		1-2			
	'		+ I race pu	157181	0		4					
	_	1										
			-									
	2				0							
			·									
					~							
	3				0							
		4										
	-	CLAY, VER	y dark grayist	n brown								
		3/ 104010	tamp. soft, n	redium	0							
	. –		trace silt	-*3							0955	
	'		I CARE - VIIT			analari Ali <u>Germani Al</u> iy					]	
		1		. 61	┥							
		CLAY has	1/ALW/= 1011=10		I 🔨		1		1		1	
		CLAV, brow damp, his	Wh (73 IDVR) Si hly plastic. 1.	9 t T T A S A	0							
	5 -	cLAV, bran alamp, his sitt	wh (43 love) si hly plastic, to	-a.L								

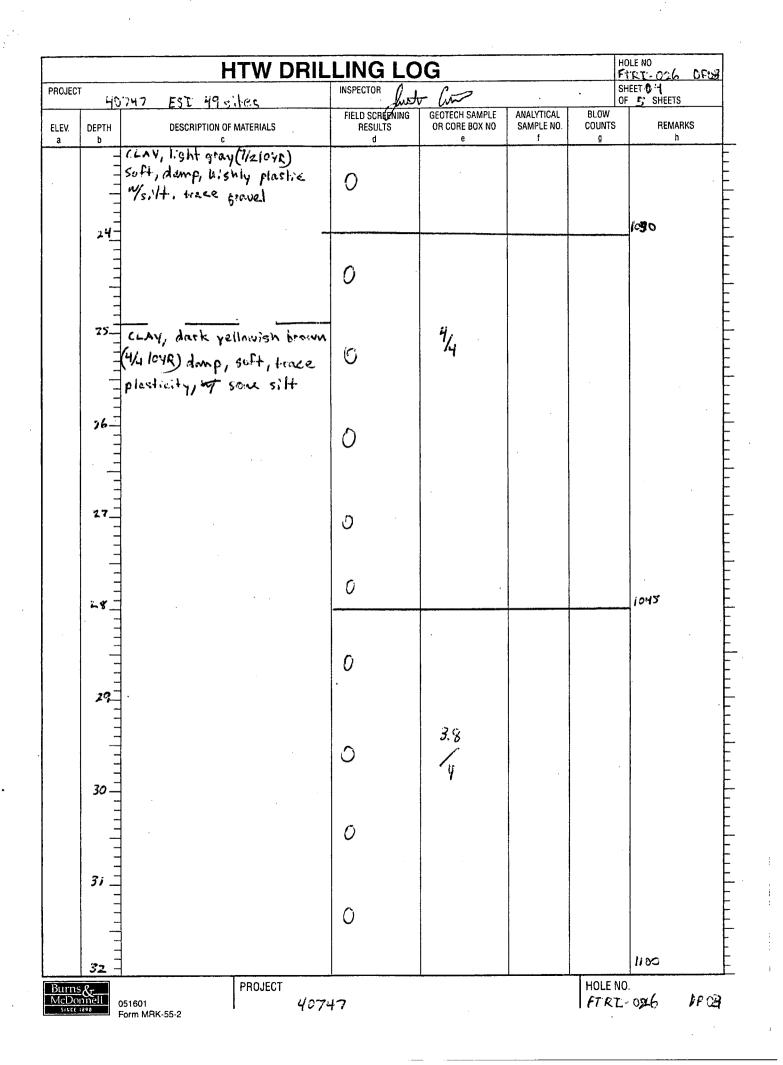
		HTW DRIL	LING LC	)G		[7]	DLE NO
PROJEC	т 4	0747 EDI 49 siles	INSPECTOR first	- Centro		SH	HEET 6 Z 5 SHEETS
ELEV. a	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS h
	6	SAME AS Above	ා ව	4/4	5802 56		
		CLAY, dark yellowish brown (4/410YR) medium, damp, medium plasticity	0				
	8-	CLAY, brown (43104A) soft domp, medium plast:c	0				1000
			0				
	9		0	3.8 14			
	10	CLAY, dart yellowish brown (4/4104R) soft, damp, hishly plastic	0				
	n	CLAY, durit brown (3/3 104R)	0		5603		
	12-	soft, damp, trace plosticity trace sitt	0		11-1-2		1025 -
			0	3,9			
	- i	CLAY, dark yellowish brown (116104R) soft, damp, Aighly plastic	Э	3.9			
	14		0				
Burns McDo sixet	nnell	051601 PROJECT 051601 40747 Form MRK-55-2	· .			HOLE NO	

•

.

•





		HOLE NO					
JECT	407	HTW DRIL 47 ESI 49 ANS	INSPECTOR	- hr		SHEET & S OF S SHEETS	
v.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS 9	REMARKS
		SAME As Above				<u> </u>	
	_		0				
	-	αρογοριατο το πότος δα δατά το άχου φάτου το του του					145
	- 33_	Refused					
		Bettern of hole					
	-	Bettern of hole SET A Temporary Fieroweter					
	-			·			
	-	· ·					
	-						
	-						
	-						
	-						
	-						
	-						
			· ·				
	-						•
	11				· .		
	-						
	-						
	_						
	-						
	-						
	_						
	11						
	-						
	11						
	-						
	-						
	•						
	-	· ·					
	-						
ns Dor	& nell (	951601 PROJECT	747			HOLEN	10. ?T-07L DP0 <del>]</del>

				HTW I	DRILL	ING	LO	G				HOLE	NO. E-026 <b>D</b> Fini
COMPAN	IY NAME						SUBCONTR				· · · <del></del> · ·	SHEET	Г 1
		BUTHS &	me.	penell			EFS 4. LOCATI					OF 4	SHEETS
3. PROJECT 40747 ESI 49 Siles			4. LUGAN	Fort Ri	ley								
NAME O	F DRILLER							ACTURER'S D	ESIGNA	TION OF DRILL			
		Genn. S			<u></u>		(	coproli	2/1	o.rect Ru	50		
	nd types of WPLING Equi			eoprohe 140:			8. HOLE L	.ocation A K					
ANU SA		FINIENI		mecrocore			9 SURFA		1				
							l	NA					
			10. DATE	STARTED			11. DATE COMP 7/19/0						
		VALEOR					15 DEPT	H GROUNDWA			111410	<u> </u>	
2 OVERE	URDEN THIC	N P	-					NA					
B. DEPTH	DRILLED INT	O ROCK					16 DEPT		AND EL/	APSED TIME AFTE	R DRILLING COM	<b>NPLETED</b>	
		N/	Ą	. <u></u>			17 ATUE			SUREMENTS (SPI			······
4. TOTAL	DEPTH OF H	iole 14						NA	CL MEA	JUNEMENTO (OP)			
B. GEOTE	CHNICAL SA		T	DISTURBED		STURBED	19		BER OF	CORE BOXES			
		0		<u>     0                               </u>					0.7				21. TOTAL CORE
). Sampl	es for che	MICAL ANALY	sis	VOC	META		OTHER	(SPECIFY)		HER (SPECIFY)	OTHER (SF		RECOVERY
		3			3				·				%
2. DISPO	Sition of Ho	DLE	Ļ	BACKFILLED	MONITORING WELL				23 SIGNATURE OF INSPECTOR				
		NA		Bentonile	Tempora. Piezame	ler	N	<b>?</b>	Ø	last on			· · · · · · · · · · · · · · · · · · ·
						FIELD S	CREENING SULTS	GEOTECH SA		ANALYTICAL SAMPLE NO	BLOW COUNTS		REMARKS
ELEV a	DEPTH b		DESCI	RIPTION OF MATERIALS c			d	e	A NU.	5AMPLE NO	9		h
	Top Soil		1										
				(de ma)	, very 0		U I						•
			brow	m (73P) Rdry,									
•	=	si:ff ,	<u>ዓ</u> ሮኋ	plastic Wg	ravel			3.4		SBOJ			
	1				(	0		3.4		1-2			
	-	CLAY	brown (4/30)Bdry, very non plastic Wgravel dart brown (3/3104B)			11)							
	_	dungi	5+1 <b>1</b> f	", trace pia	stic								
						0							
	=					1							
						1							
	=					0							
		ł				ŀ							
	3			m (1/3 KOYA)		1							
	3	CLAV	h na.		A IMAS	1							
	3	CLAY,	brow .	a Alamiti	r P								
	3	CLAY, Stiff.	brou Irae	e plastie	P	r.							
	3	CLAY, Stiff.	brou brae	e plastie	P	0							
	3	CLAV, STIFF.	brou Irae	e plastie	P	0						0905	
		CLAY, Stiff.	irae	e plast; c	P	0						0905	
		CLAY, Stiff.	brou Irac	e plastie	P							0905	
		CLAY, Stiff.	brou brac	e plastic	P	0						0905	
		CLAY, Stiff.	brou Irac	e plastie	P		<del></del>					090 <u>5</u>	

0

PROJEC	T		INSPECTOR first and			FTRI-026 D SHEET & Z	
ELEV.	4071 DEPTH	H7 EST 49 SILES DESCRIPTION OF MATERIALS	FIELD SOREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO	ANALYTICAL SAMPLE NO.	BLOW	OF Z SHEETS REMARKS
a	b	сс	d	e	f	g	h
		same as Ahme	0				
	6-						
	-		0	3.6			
	=	CLAY, dark yellowish brown	-	4			
		(3/410YR) damp, wedium					
	7 _	trace plasticity	Ø		560Z		
					7-8		
			0				
•	8_						0910
			0		· ·		
		(LAY, Olive gray (5/254)					
		Namp, medium, trace plasticity, Wsilt	0	2.4.			
	-		Ŭ	3.4			
				<b>_</b> ,5			
			0				
	10-				5803		
			0		40# 9-11		
			_		•		
	11=	CLAY, reddish brown (4/4 54R) damp, soft, brae plasticity and silt, trace shall	<b>C</b>				
		and silt trace shall	C				0915
		/ · · · · · · · · · · · · · · · · · · ·					
	12-		0	<b>B</b> 5			
				25			
	-		0				
	-						
	13_ 		0				Refusal
·							BoHom of
			0				hole 141
Burns	14	Shale PROJECT	<u> </u>			HOLE N	0.
McDo Since	nnell	051601 イクフィイフ Form MRK-55-2				FTRI	-026 DP0-

•

•

# 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 Kans 14700 W. 114th Terrace

Kansas City, Missouri 64155 e Lenexa, Kansas 66215 Tel: 816-468-5858 Tel: 913-894-5150 KC@kveng.com 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

et en jer Ser en ser et e

,